

U.S. Coast Guard Research and Development Center
1082 Shennecossett Road, Groton, CT 06340-6096

Report No. CG-D-01-99, II

**Investigation of Fuel Oil/Lube Oil Spray Fires
On Board Vessels**

Volume II

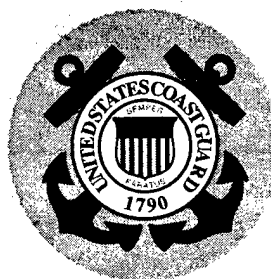
Incident Databases

Appendix A: MISREP Events and Associated Event Trees Characterization Tables

Appendix B: MSIS Events and Associated Event Trees/Event Characterization Tables



**FINAL REPORT
NOVEMBER 1998**



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Prepared for:

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United States Coast Guard
Marine Safety and Environmental Protection (G-M)
Washington, DC 20593-0001**

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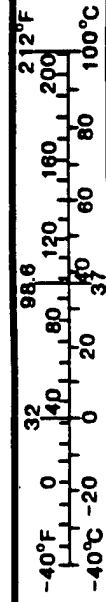
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15. Supplementary Notes The U.S. Coast Guard Research and Development Center's technical point of contact is Richard Hansen at 860-441-2866. The U.S. Coast Guard Headquarters project sponsor is Matthew Gustafson at 202-267-0170.					
16. Abstract (200 words or less) The U.S. Coast Guard sponsored this project to assess control measures (technological advancements as well as safety management systems) for preventing or mitigating the impacts of fuel oil or lube oil spray fires on board vessels, particularly in the engine room. For this purpose, we identified a number of proposed control measures to prevent/mitigate the impacts of spray fires, and then we evaluated the reduction in risk that can be expected from the implementation of each measure. As part of our evaluation, we identified many sources of relevant incident investigation reports. These sources provided a total of 143 fires caused by releases of fuel oil/lube oil; of these 9 are known to have resulted in fatalities, and another 8 are known to have resulted in personnel injury. Our research findings substantiated several (and refuted a few) previous findings/beliefs regarding spray fires. In addition, our investigation resulted in 18 feasible, practical control measures (recommendations) to reduce risks associated with fuel oil/lube oil spray fires in engine rooms. The first 12 recommendations address specific changes to 1) existing fuel oil/lube oil equipment and systems and 2) management issues. The next three recommendations address more significant changes to fuel oil/lube oil equipment, and they are presented for new (or significantly modified) ships. We also identified two areas that require additional research and development efforts, and we developed two recommendations to address these areas. Finally, we determined that much of the risk associated with fuel oil/lube oil spray fires stems from deficiencies in (or lack of) safety management systems. That is, the root cause of these incidents is generally the absence of, neglect of, or deficiencies in management systems. This report consists of three volumes. Volume I contains a summary of these practices. Volume II consists of Appendix A: MISREP Events and Associated Event Trees Characterization Tables; Appendix B: MSIS Events. Volume III consists of Appendix C: LMIS Events; Appendix D: Nippon Kaiji Kyokai (NK) Events; Appendix E: TSB Events; Appendix F: MIU Events; Appendix G: NTSB/MAR-95/04 Events; Appendix H: Preliminary Recommendations; Appendix I: Qualitative Analysis of Oil Spray Incidents; Appendix J: Evaluation of the Impact of Preliminary Recommendations; Appendix K: Resumes of Hazard Evaluation Team Members; and Appendix L: June 16-17, 1997, Trip Report.					
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METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures				Approximate Conversions from Metric Measures			
Symbol	When You Know	Multiply By.	To Find	Symbol	When You Know	Multiply By	To Find
LENGTH				LENGTH			
in	inches	* 2.5	centimeters	mm	millimeters	0.04	inches
ft	feet	30	centimeters	cm	centimeters	0.4	inches
yd	yards	0.9	meters	m	meters	3.3	feet
mi	miles	1.6	kilometers	km	kilometers	1.1	yards
						0.6	miles
AREA				AREA			
in ²	square inches	6.5	square centimeters	cm ²	square centimeters	0.16	square inches
ft ²	square feet	0.09	square meters	m ²	square meters	1.2	square yards
yd ²	square yards	0.8	square meters	km ²	square kilometers	0.4	square miles
mi ²	square miles	2.6	square kilometers	ha	hectares (10,000 m ²)	2.5	acres
	acres	0.4	hectares				
MASS (WEIGHT)				MASS (WEIGHT)			
oz	ounces	28	grams	g	grams	0.035	ounces
lb	pounds	0.45	kilograms	kg	kilograms	2.2	pounds
	short tons (2000 lb)	0.9	tonnes	t	tonnes (1000 kg)	1.1	short tons
VOLUME				VOLUME			
tsp	teaspoons	5	milliliters	ml	milliliters	0.03	fluid ounces
tbsp	tablespoons	15	milliliters	l	liters	0.125	cups
fl oz	fluid ounces	30	milliliters	l	liters	2.1	pints
c	cups	0.24	liters	l	liters	1.06	quarts
pt	pints	0.47	liters	l	liters	0.26	gallons
qt	quarts	0.95	liters	l	liters	35	cubic feet
gal	gallons	3.8	liters	m ³	cubic meters	1.3	cubic yards
ft ³	cubic feet	0.03	cubic meters	m ³	cubic meters		
yd ³	cubic yards	0.76	cubic meters				
TEMPERATURE (EXACT)				TEMPERATURE (EXACT)			
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature

* 1 in = 2.54 (exactly).



APPENDIX A

MISREP Events and Associated Event Trees/Event Characterization Tables

This attachment presents the analysis of selected mishap events from MISREP, a computerized U.S. Coast Guard database.^a A mishap is any unplanned, unexpected, or undesirable event causing injury, occupational illness, death, material loss, or damage.^b (In the MISREP database, the term "mishap" is used in lieu of "accident" and/or "occupational illness.") To qualify as a mishap in the MISREP database, the event must involve one or more of the following:

- a. Coast Guard facilities damaged, including a vessel, boat, shore facility, vehicle, weapon, or other equipment
- b. Coast Guard facilities damaged as a result of Coast Guard operations
- c. Coast Guard military member injured or killed, either on or off duty
- d. Coast Guard Reserve military member injured or killed when on active duty status (ADT, TEMAC, IDT, or SADT), either on or off duty
- e. Coast Guard civilian employee injured or killed while performing Coast Guard-related work. Any occupational injury or illness reported on a Form CA-1 or CA-2 to the Office of Workers' Compensation, Department of Labor, is a mishap
- f. Coast Guard Auxiliarist injured or killed while under orders
- g. Coast Guard Auxiliary facility damaged while operating under orders
- h. Visitors on a Coast Guard facility or other civilian personnel harmed as a result of official Coast Guard operations
- i. Civilian contractors injured or killed while working on Coast Guard property
- j. Coast Guard member who developed an illness that can be ascribed to an immediate (acute) or long-term (chronic) occupational exposure. For illness resulting from chronic exposure (e.g., hearing loss), a mishap report should be initiated when the illness is first diagnosed

We performed computer searches to identify the mishaps in the MISREP database from 1990 to 1996 that involved sprays of flammable or combustible liquids on board vessels. This attachment presents the analysis of a total of 55 mishaps involving sprays of flammable or combustible liquids on board ships. The analysis of each mishap is presented in three pages:

- The mishap description, as documented in the MISREP database (we have not edited or modified these descriptions)
- An event tree, which shows the sequence of events associated with the mishap
- An event characterization table, which supplements the event tree with comments (as documented in or inferred from the MISREP description) about the system/location, cause, ignition source, means of detection, means of release isolation, means of fire suppression, impact on propulsion, impact on steering, human casualty, and corrective action

^a*Safety and Environmental Health Manual*, U.S. Department of Transportation, United States Coast Guard, COMDTINST M5100.47, Washington, DC, April 1990.

^bMishap investigations are conducted not to place blame on, discipline, or punish those involved directly or indirectly, but rather to trace the evolution of events from normal operation through the mishap. This sequence of events is analyzed for all the contributing or causal factors that played a role in the mishap. The mishap investigation seeks to find out why a mishap occurred so similar mishaps may be prevented in the future.

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EVENT: 5628

DESCRIPTION	ACTIONS	CAUSES
WHILE ATTEMPTING TO START CG191500 TO GET UNDERWAY FOR A SAR MISSION, THE STBD ENGINE CAUGHT ON FIRE. IT WAS DETERMINED THAT THE HOSES FOR THE CHOKE HAD BEEN PULLED OFF ON THE ENGINE SIDE.	FIRE WAS PROMPTLY PUT OUT WITH A CO2 FIRE EXTINGUISHER, HOSES WERE REPLACED.	POSSIBLE DESIGN FAULT. WHEN PULLING COVER OFF OF OUTBOARD THIS HOSE IS SUSCEPTIBLE OF CATCHING ON THE COVER LATCH.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MISREP01					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					<i>Fire limited to one compartment</i>
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 5628 (MISREP01)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	Cover latch suspected of having caught the hoses for the choke and pulled them off. This may have been a design flaw	
Ignition Source		Hot surface
Detection		Crew
Release Isolation		Crew shut off the engine, which shuts off the fuel pump
Fire Suppression	CO ₂ extinguisher	
Impact on Propulsion		This event would have caused partial loss of propulsion (crew was attempting to start the engine to get under way)
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	No preventive action mentioned – hoses were replaced	

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EVENT: 9404

DESCRIPTION	ACTIONS	CAUSES
THE CHIEF ENGINEER NOTICED PUFFS OF SMOKE AND UNUSUAL NOISES COMING FROM THE OUTBOARD TURBOCHARGER OF #2MDE. CHIEF ENG. NOTIFIED THE BRIDGE OF SITUATION AND RANG UP SLOW ON THE ENGINE ORDER TELEGRAPH. AT THIS POINT, THE BRIDGE BACKEDDOWN FULL DUE TO DOCKING, THE CHIEF ENG. STATES THAT THE SOUNDS FROM THE TURBO DURING THIS MANEUVER WOULD INDICATE A COMPLETE INTERNAL FAILURE OF THE TURBOWHICH RESULTED IN A FIRE WHICH WAS CONFINED TO THE TURBO INSULATING BLANKET AND AN EMISSION OF THICK BLACK SMOKE. THE CHIEF ENG. EXPANDED FOUR FIFTEEN POUND HALON EXTINGUISHERS ONTO THE TURBO BLANKET, KNOCKING DOWN, BUT FAILING TO EXTINGUISH FIRE. THE CHIEF ENG. HAD THE OILER SECURE AFTER MOORING LINES HAD BEEN PUT OUT AND USED THE 100 POUND CO2 HOSE EL TO EXTINGUISH THE FIRE.	SUPRTCEN NY INDUSTRIAL INFORMED OF POSSIBLE FLAW IN THEIR QUALITY CONTROL PROCEDURES, FBM TO ASSURE QUALITY OF REBUILT TURBOS PRIOR TO FUTURE INSTALLATIONS.	INTERNAL FAILURE OF THE TURBO WHICH ALLOWED LUBE OIL TO ESCAPE TO THE INSULATING BLANKET. TURBO HAD BEEN RECENTLY REBUILT BY SUPRTCEN NY INDUSTRIAL.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP02</div>					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					<i>Fire limited to one compartment</i>
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 9404 (MISREP02)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil/engine room	
Cause	Internal failure of turbocharger. This may have been the result of a flaw in the procedures used in the recent rebuilding of the turbocharger	
Ignition Source		Hot surface
Detection	Crew noticed puffs of smoke and noise from turbocharger	
Release Isolation	Crew shut off the engine	
Fire Suppression	First used Halon extinguishers to control the fire, but a CO ₂ extinguisher was eventually needed to put out the fire	
Impact on Propulsion		Partial loss of propulsion
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	Informed the company that rebuilt the turbocharger of a possible flaw in their quality control procedures. Ensure quality of rebuilt turbochargers before installation	

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EVENT: 9476

DESCRIPTION	ACTIONS	CAUSES
APPROX 1350 COXSWAIN REPORTS LOSS OF STARBOARD TACH. ENGINEERS WENT INTO ENGINE ROOM TO EFFECT REPAIRS. UNABLE TO REPAIR ON SCENE, ENGINEERS TAPED AND SECURED THE VABLE IN FRONT OF STARBOARD ENGINE. AT APPROX. 1404 WHILE MAKING SECOND ROUND OF ENGINE ROOM, UPON OPENING HATCH, DUTY ENGINEER DISCOVERED THAT THE ENGINE ROOM WAS ON FIRE. ALMOST SIMULTANEOUSLY THE BILGE ALARM AND HALON ALARMSOUNDED. ENGINEER WENT BELOW CABIN TO LOOK IN VIEW WINDOW TO DETERMINE TYPE OF FIRE. COXSWAIN PULLED FUEL STOP IMMEDIATELY ON BOTH ENGINES. THE STARBOARD ENGINE SHUT DOWN HOWEVER THE PORT ENGINE KEPT RUNNING. THE COXSWAIN NOTICE THAT THE PORT TACH WAS AT 3700 RPM INDICATING A RUNAWAY PORT ENGINE. ALL AIR SUPPLY VENTS WERE STUFFED WITH BLANKETS. DUTY ENGINEER ACTIVATED THE HALON ONBOARDSYSTEM TO EXTINGUISH FIRE. COXSWAIN TURNED BOAT TO PORT TO CONTROL RUNAWAY. HALON WAS SEEN COMING OUT OF PORT EXHAUST. AFTER APPROX. 304 MINUTES THE PORT ENGINE IDLED TO 1500 RPM BEFORE SHUTTING DOWN COMPLETELY. AT APPROX. 1409 FIRE WAS REPORTED OUT AND REFLASH WATCH SET BY BOAT CREW. CG 41463 THEN STOOD BY FOR TOW.	ALL PERSONNEL HAVE BEEN INSTRUCTED TO USE ENGINEROOM SCUTTLE ONLY FOR ENTRY. RECOMMEND INSTALL SOME TYPE COVER OVER OIL SUPPLY LINE. *****	TURBO OIL SUPPLY ELBOW FAILURE ON STARBOARD ENGINE. WHY TURBO OIL SUPPLY LINEFAILED IS UNKNOW. SPECULATION INDICATES LINE MAY HAVE BEEN STEPPED ON DURING BOATS ANNUAL YARD AVAILABILITY AT SOME PT. *****

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP03</div>					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					<i>Vessel loses propulsion and/or steering; fire limited to one compartment</i>
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 9476 (MISREP03)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil/engine room	
Cause	Failure of an elbow in the turbocharger oil supply line. The report speculates that the reason for the elbow failure was that the line was stepped on	
Ignition Source		Hot surface
Detection	Crew (during a round) and, almost simultaneously, the bilge alarm and Halon alarm	
Release Isolation	Crew pulled fuel stop for both engines	
Fire Suppression	All air supply vents were stuffed with blankets to stop the fire in the engine room. Duty engineer activated the Halon onboard system to extinguish the fire	
Impact on Propulsion	The vessel should have lost propulsion (both engines were shut off) at the onset of the incident. However, the port engine kept running ("runaway engine"). Vessel had to be towed	
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	Instructed personnel to use engine room scuttle only for entry The report also recommended installing some type of cover to protect the oil supply line	

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EVENT: 10108

DESCRIPTION	ACTIONS	CAUSES
#1 MAIN DIESEL ENGINE WAS RUNNING AT 1800 RPM WHEN THE GOVERNOR LINKAGE BOOT COVER RIPPED AND BLEW OUT, SPRAYING OIL ONTO HOT EXHAUST RISER. THE OIL SPRAY CAUSED EXCESSIVE SMOKE IN THE ENGINE ROOM. NUMBER ONE MAINE DIESEL ENGINE WAS SHUT DOWN AND SHIP WENT TO GQ. NO ACTUAL FIRE OCCURED. LAGGING DAMAGED BY OIL.LAGGING CUT OUT. UPON INSPECTION OF #1 MDE 3 BROKEN PISTONS WERE FOUND. SUBSEQUENT INVESTIGATION FOUND LUBE OIL PRESSURE HAD STEADILY DECLINED FOR THREE HOURS RESULTING IN CATASROPHIC FAILURE OF INTERAL PART OF ENGINE.	SECURED #1 MAIN DIESEL ENGINE. BETTER ENGINEERING TRG PROGRAM.*****	STEADY DECLINE OF LUBE OIL PRESSURE RESULTED IN CATASROPHIC FAILURE OF ENGINE. RIPPED BOOT ON GOVERNOR LINKAGE CAUSdED BY EXCESSIVE CRANKCASE PRESSURE.*****

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MISREP04					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					<i>Fire (mostly smoke) limited to one compartment</i>
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 10108 (MISREP04)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil/engine room	
Cause	Steady decline of lube oil pressure resulted in catastrophic failure of engine. The cause of the lube oil pressure decline was not mentioned	
Ignition Source	Hot surface (exhaust riser). There was no "actual fire" (mostly smoke)	
Detection		Crew
Release Isolation	Crew shut off engine	
Fire Suppression	None required - no fire	
Impact on Propulsion	Partial loss of propulsion	
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	Better engineering training program	

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EVENT: 10977

DESCRIPTION	ACTIONS	CAUSES
SHIP WAS UNDERGOING A YARD PERIOD AND AS THE WIRE ROPE WAS BEING WORKED ONTO ITS DRUM ON THE MAIN DECK, A HIGH PRESSURE HYDRAULIC HOSE LOCATED BELOW THE MAIN DECK SEPARATED AT ONE END OF A FITTING CAUSING 50-60 GALS OF HYDRAULIC OIL TO SPEW WITH CONSIDERABLE FORCE UP ONTO THE OVERHEAD AND THEN SPRAYED OVER THE COMPARTMENT.	MAKE SURE HYDRAULIC HOSES ARE TESTED PROPERLY BEFORE INSTALLATION.*****	MATERIAL FAILURE. IMPROPER HYDROSTATIC TEST AT THE FACILITY WHICH ASSEMBLED HYDRAULIC HOSES.*****

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP05</div>					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 10977 (MISREP05)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Hydraulic oil/main deck	
Cause	Material (hose) failure. Hydraulic hose believed to be defective. The report suggests that the hydrostatic test of the hose at the manufacturing facility was inadequate	
Ignition Source	Not applicable (no ignition)	
Detection		Crew
Release Isolation		None
Fire Suppression	None required - no fire	
Impact on Propulsion		None
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	Ensure that hydraulic hoses are tested properly before installation	

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EVENT: 11737

DESCRIPTION	ACTIONS	CAUSES
CG 41390 U/W FOR LAWENF MISSION. TWO JARRING BANGS WERE HEARD COMING FROM THE ENGINE ROOM. ENGINES WERE BROUGHT TO NEUTRAL AND ENGINE ROOM WAS INVESTIGATED VIA INSPECTION WINDOW IN SURVIVAL CABIN. HEAVY BLACK AND GRAY SMOKE, AND FLAMES WERE SEEN COMING FROM THE TOP OF THE STBD MDE. AS PER UNIT UTB FIRE DOCTRINE, THE ENGINES WERE SECURED, STATION WAS NTFD, POWER ELECTRICAL POWER SECURED, AND VENTS AND HATCHES WERE SECURED AND DOGGED. DUE TO INTENSITY OF FIRE, IT WAS DETERMINED THAT HALON WOULD BE USED.	NONE*****	VARIABLE SPEED ADJUSTING SCREW BACKED OUT, CAUSING A SPRAY OF FUEL INTO THE ENGINE COMPT, STRIKING THE TURBO CHARGER, AND IGNITING IT.*****

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					<i>Vessel loses propulsion and/or steering; fire limited to one compartment</i>
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event: MISREP06

Event Number: 11737 (MISREP06)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	Variable-speed, adjusting screw backed out, causing a spray of fuel	
Ignition Source	Hot surface on turbocharger	
Detection	Crew heard noise	
Release Isolation	Crew brought engines to neutral and then secured	
Fire Suppression	Vents and hatches were secured and dogged, and Halon was then used to stop the fire	
Impact on Propulsion	Propulsion was lost when engines were brought to neutral and then secured	
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	None suggested in the report	

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EVENT: 12531

DESCRIPTION	ACTIONS	CAUSES
RHI WAS BEING PICKED UP TO LOWER OVER THE SIDE WITH THE SINGLE POINT DAVIT. THE CABLE WAS BEING TAKEN IN WHEN IT JUMPED OVER ITS LAY WHICH MADE THE WINCH STOP OUT OF ADJUSTMENT. THE CABLE CAME IN TOO FAR AND CAUSED THE BOAT CAGE TO HIT A HYDRAULIC TUBE ON THE DAVIT WINCH ASSEMBLY WHEN THE BOAT WAS MOVED OUT FOR LOWERING. HYDRAULIC OIL SPRAYED ONTO THE SHIP AND INTO THE EYES OF ONE BOAT HANDLER, WHICH REQUIRED THE CORPSMAN TO FLUSH HIS EYES.	DAVIT OPERATOR CHECKING CABLE AFTER PAYING IN TO ENSURE CABLE IS NOT TOO FAR IN AND DID NOT JUMP A LAY.*****	THE WINCH CABLE JUMPING ITS LAY ALLOWING THE CABLE TO PAY IN TOO FAR.*****

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
					No consequences of interest
					<i>Human casualty(ies)</i>
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event: MISREP07

Event Number: 12531 (MISREP07)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Hydraulic oil	Main deck
Cause	Winch accident (cable jumped over its lay and caused the winch to stop out of adjustment), resulting in a cage hitting a hydraulic tube	
Ignition Source	Not applicable (no ignition)	
Detection	Crew was present at the time of release	
Release Isolation		None
Fire Suppression	None required - no fire	
Impact on Propulsion		None
Impact on Steering		None
Human Casualty	Hydraulic oil sprayed into eyes of boat handler	
Corrective Action to Prevent Recurrence	Davit operator should check cable to ensure that it does not jump a lay	

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EVENT: 13221

DESCRIPTION	ACTIONS	CAUSES
WATCHSTANDER ENTERED SPACE TO CLEAN THE FUEL OIL PURIFIER AND DUPLEX STRAINER. WATCHSTANDER SECURED THE FUEL OIL PURIFIER AND SHIFTED THE STRAINER TO THE LEFT STRAINER. WHEN WATCHSTANDER REMOVED TOP FROM THE 'OFF LINE' STRAINER, DIESEL FUEL FLOWED INTO THE SPACE SOAKING THE WATCHSTANDER. SEVERAL ATTEMPTS BY WATCHSTANDER TO SECURE THE TOP ON THE STRAINER FAILED AND FUEL CONTINUED TO FLOW INTO THE SPACE. WATCHSTANDER THEN SECURED THE SUPPLY VALVE AT THE FUEL MANIFOLD. GQ WAS CALLED AWAY AND THE MAIN SPACE FIRE DOCTRINE ENACTED.	N/A*****	THE WOODRUFF KEY SECURING THE STRINER SPOOL TO THE HANDLE FAILED. WHILE WATCHSTANDER MOVED THE HANDLE TO THE OTHER STRAINER POSITION THE SPOOL REMAINED INITS ORIGINAL POSITION .****

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					<i>Human casualty(ies); vessel loses propulsion and/or steering</i>
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event: MISREP08

Event Number: 13221 (MISREP08)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil (purifier and duplex strainer)	Engine room
Cause	The key that secures the strainer spool to the handle failed	
Ignition Source	Not applicable (no ignition)	
Detection	Crew (it happened when watchstander was cleaning the equipment)	
Release Isolation	After failing on several attempts to secure the top of the strainer, watchstander secured the supply valve at the fuel manifold	
Fire Suppression	None required - no fire	
Impact on Propulsion		Propulsion was probably lost when the watchstander secured the supply valve at the fuel manifold
Impact on Steering		None
Human Casualty	Watchstander was soaked in fuel oil. No details were provided about the severity of the injury, if any	
Corrective Action to Prevent Recurrence	None suggested in the report	

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EVENT: 93193011

DESCRIPTION	ACTIONS	CAUSES
<p>MAJOR FUEL OIL LEAK. NO. 2 MDE FUEL FILTER/COALESCER HAD JUST BEEN SHIFTEDFROM AFT TO FORWARD. AN FA AND AN FN WERE ASSIGNED TO ISOLATION THE AFTCOALESCER FROM THE FORWARD COALESCER. HOWEVER, THE BALL OF THE TOP VALVE WASSLIGHTLY OPEN. ALSO, THE HANDLE WAS WORN. THE FA AND FN THOUGHTST THEY WEREDRAINING THE COALESCER AS WELL AS RELEASING ALL REMAINING PRESSURE BY OPENINGTHE BOTTOM DRAIN VALVE. THEY BEGAN TO REMOVE THE TOP COVER WHEN OIL BEGANSPRAYING. BOTH CREWMEMBERS WERE SOAKED WITH FUEL, AND SPRAYED IN THE EYES. THEFA DEFLECTED THE FUEL SPRAY INTO THE BILGE WITH HIS GANDS UNTIL THE ENGINE WASSECURED. GENERAL EMERGENCY WAS SET AND BILGES WERE COVERED WITH AFFF.APPROXIMATELY 30 GALLONS OF FUEL OIL WERE LOST. NO DAMAGE TO EQUIPMINTOCCURRED.</p> <p>This event was also documented as event 93223002 as follows:</p>	<p>PERSONNEL WILL WEAR PROPER EYE PROTECTION AND GLOVES WHEN SHIFTING COALESCERS.*****</p> <p>This event was also documented as event 93223002 as follows:</p> <p>NONE.*****</p>	<p>PERSONNEL ERROR; CREWMEMBERS WERE NOT WEARING PROPER EYE PROTECTION. ALSO THEYSHOULD HAVE VENTED PRESSURE FROM THE TOP VENT PLUG AS WELL AS THE BOTTOM DRAINVALVE. THIS WOULD HAVE REVEALED THAT THE SYSTEM WAS STILL PRESSURIZED.****</p> <p>This event was also documented as event 93223002 as follows:</p> <p>PERSONNEL ERROR: THE FIREMEN SHOULD HAVE VENTED THE PRESSURE FROM THE TOPVENT PLUG AS WELL AS THE BOTTOM DRAIN VALVE. THEY ALSO SHOULD HAVE WORNSAFETY GOGGLES AND DUEL HANDLING GLOVES IAW PMS M-C-003. IN ADDITION, THEYSHOULD HAVE TAKEN THE PMS CARD TO THE SCENE AND FOLLOWED THE LISTEDPROCEDURES.**</p>
<p>MAJOR FUEL OIL LEAK. NO 2 MDE FUEL FILTER/COALESCER HAD JUST BEEN SHIFTEDFROM AFT TO FORWARD. A FIREMAN AND A FIREMAN APPRENTICE WERE ASSIGNED TOCHANGE THE AFT FILTER. VALVE HANDLES WERE ALIGNED PROPERLY, ISOLATING THE AFTCOALESCER FROM THE FORWARD COALESCER. HOWEVER, THE BALL OF THE TOP VALVE DIDNOT COMPLETELY ROTATE WITH THE HANDLE, LEAVING THE VALVE SLIGHTLY OPEN. THEHANDLE WAS WORN. THE FN AND FA THOUGHT THEY WERE DRAINING THE COALESCER ASWELL AS RELEASING ALL REMAINING PRESSURE BY OPENING THE BOTTOM DRAIN VALVE.THEY BEGAN TO REMOVE THE TOP COVER WHEN OIL BEGAN SPRAYING. BOTH CREW MEMBERSWERE SOAKED WITH FUEL. THE FA DEFLECTED THE FUEL SPRAY INTO THE BILGE WITHHIS HANDS UNTIL THE ENGINE WAS SECURED ...</p>		

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP09</div>					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 93193011 and 93223002 (MISREP09)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	Personnel error (crew should have vented pressure from the top vent plug as well as the bottom drain valve to reveal that the system was pressurized). Also, crew should have (1) worn goggles and fuel gloves, (2) taken the PMS card to the scene, and (3) followed the listed procedures	
Ignition Source	No ignition occurred	
Detection		Crew present at release location during occurrence
Release Isolation	Engine was "secured"	
Fire Suppression		None required - no fire
Impact on Propulsion	None	
Impact on Steering	None	
Human Casualty	Fuel oil sprayed into eyes of crew members	
Corrective Action to Prevent Recurrence	The report states that crew will wear proper eye protection and gloves when shifting coalescers. (The report does not mention how this will be ensured)	

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EVENT: 93195011

DESCRIPTION	ACTIONS	CAUSES
WATCH RELIEFS ENTERED ENGINE ROOM AND NOTED A STRONG ODOR OF DIESEL FUEL. THERE WAS FOUND TO BE A LEAK IN THE FILTER BANK OF NO.1 MDE, THE CAP NUT FOR ONE FILTER ASSEMBLY BACKED OFF CAUSING THE CAP TO LEAK. APPROX 2 GALLONS OF FUEL WERE SPILLED THAT WERE SUBSEQUENTLY WIPED UP BY SHIP'S FORCE.	ENSURE CAP NUTS ARE TIGHTENED ACCORDING TO MANUFACTURER'S SPECIFICATIONS. CONDUCT FREQUENT CHECKS OF THE CAP NUT WHILE IN SERVICE.*****	IMPROPER TIGHTENING TORQUE FOR FILTER CAP NUT.*****

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP10</div>					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 93195011 (MISREP10)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	The cap nut for one filter assembly backed off, causing the cap to leak. Approximately 2 gallons of fuel was spilled. The cap nut backed off because of improper tightening	
Ignition Source		No ignition occurred
Detection	Crew (watch reliefs) noticed strong odor	
Release Isolation		Replaced cap on filter assembly
Fire Suppression		None required - no fire
Impact on Propulsion		None
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	Ensure cap nuts are tightened according to manufacturer's specifications Conduct frequent checks of the cap nuts while in service	

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EVENT: 93221025

DESCRIPTION	ACTIONS	CAUSES
WHILE RELEASING AIR FROM A PRESSURIZED FUEL SYSTEM FUEL SPRAYED OUT OF THE AIRBLEED AND INTO MK3 USRY'S EYES AND FACE.	MK3 OSRY WAS COUNCILLED ON THE USE OF PROPER SAFETY EQUIPMENT WHILE PERFORMING HAZARDOUS TASK.*****	MK3 USRY WAS NOT USING THE PROPER SAFETY PROTECTION TO PERFORM THE PMS PROCEDURE WHICH ALLOWED FUEL TO SPRAY INTO HIS EYES FACE, MOUTH AND NOSE.*****

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event: MISREP11

Event Number: 93221025 (MISREP11)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil	Location unclear
Cause	While releasing air from a pressurized fuel system, fuel sprayed out of the air bleeder and into crew member's face and eyes	Some fuel oil was probably expected to bleed out while attempting to remove air from fuel system; however, crew member was not wearing proper personal protective equipment (PPE)
Ignition Source		No ignition occurred
Detection		Crew member (present at release location during occurrence)
Release Isolation		Spray was probably isolated by re-tightening the air bleeder
Fire Suppression		None required - no fire
Impact on Propulsion		None
Impact on Steering		None
Human Casualty	Fuel oil sprayed into eyes, mouth, and nose of crew member	
Corrective Action to Prevent Recurrence	Crew member was instructed on the use of proper PPE during hazardous tasks	

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EVENT: 93265006

DESCRIPTION	ACTIONS	CAUSES
SMOKE WAS REPORTED IN 3 COMPARTMENTS AND GENERAL EMERGENCY WAS SET. ELECTRICAL POWER TO THE 3 COMPARTMENTS WAS SECURED. DURING THE INVESTIGATION OF THE SPACES, SMOKE/HEAT WAS REPORTED IN THE JP-5 PUMPROOM; THE FIXED CO2 SYSTEM WAS ENERGIZED. ALL COMPARTMENTS AND JP-5 PUMPROOM WERE INVESTIGATED WITH NO EVIDENCE OF A FIRE. JP-5 PUMPROOM WAS DESMOKE, ATMOSPHERIC TESTS SAT AND ELECTRICAL POWER RESTORED.	GAUGE LINE REPLACED. ENTIRE SYSTEM IS SCHEDULED FOR REPLACEMENT IN DRYDOCK IN APPROXIMATELY ONE MONTH.*****	A GAUGE LINE ON A REEFER COMPRESSOR IN JP-5 PUMPROOM RUPTURED. OIL FROM THE GAUGE LINE HAD SPRAYED ONTO SURROUNDING HOT PIPES AND CREATED THE SMOKE. THE GAUGE LINE FAILED DUE TO AGE.****

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP12</div>	<div></div>	<div></div>	<div></div>	<div></div>	No consequences of Interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 93265006 (MISREP12)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Oil pump room	
Cause	A gauge line on a refrigeration compressor in the pumproom ruptured because of age	
Ignition Source		No ignition occurred (smoke only, because of oil contacting adjacent hot pipes)
Detection	Smoke reported in three compartments; smoke and heat reported on subsequent investigations	
Release Isolation		None
Fire Suppression	The fixed CO ₂ system was energized, but upon subsequent investigation no evidence of a fire was found	
Impact on Propulsion		None
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	Gauge line was replaced The entire system is scheduled for replacement in dry dock in approximately 1 month	

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EVENT: 93293039

DESCRIPTION	ACTIONS	CAUSES
DURING WATCH ROUTINE W/S SHIFTED F/O DUPLEX STRAINER TO THE OFFLINE STRAINER IN ORDER TO CLEAN THE STRAINER SCREEN. UPON UNCAPPING THE STRAINER TOP F/O BEGAN FLOWING FROM THE STRAINER. THE F/O TRANSFER VALVE WAS CLOSED AND STRAINER WAS RECAPPED. APPROX. 500 GALLONS OF DFM SPILLED IN TO THE BILGE OF THE FORWARD MACH. SPACE.	STRAINER WAS LOCK WIRED IN PLACE UNTIL NEW KEY COULD BE INSTALLED. OTHER DUPLEX STRAINER BALSSES WERE INSPECTED AND FOUND TO BE WORKING FINE. *****	FATIGUE FAILURE OF THE METAL KEY CONNECTING THE STRAINER BALE TO THE HANDLE. THIS PREVENTED THE BALE FROM TURNING WITH THE HANDLE. *****

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP13</div>					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 93293039 (MISREP13)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/forward machine space	
Cause	Fatigue failure of the metal key connecting the strainer bale to the handle, which prevented the bale from turning with the handle. Upon uncapping the strainer top, fuel oil began flowing from the strainer. Approximately 500 gallons of fuel oil was spilled	
Ignition Source		No ignition occurred
Detection		Crew present at release location during occurrence
Release Isolation	The fuel oil transfer valve was closed, and the strainer was recapped	
Fire Suppression		None required - no fire
Impact on Propulsion		None
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	Strainer was lock-wired in place until a new key could be installed Also inspected other duplex strainer bales to ensure that they were working properly	

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EVENT: 93293082		
DESCRIPTION	ACTIONS	CAUSES
<p>THE OVERHAUL OF NR1 S/S GEN THE OVERSPEED ASSX AND MOUNTING BRACKET FELL ONSIDE OF ENGINE AND UNKNOWINGLY SHORTED ACROSS THE START SOLENOID. IT WAS ALSOMAKING CONTACT WITH THE FUEL OIL SUPPLY AND RETURN LINES. THE GROUNDING OUTOF THE 24V STARTING SYSTEM CAUSED THE FUEL LINE TO HEAT UP AND MELT THE RUBBERINTERIOR ALLOWING FUEL TO RUN THROUGH THE STEEL JACKET. AT THIS POINT ONE OFTHE ENGINEERS MOVED THE OVERSPEED ASSMBLY AND CAUSED A SPARK WHICH IGNITED THEFUEL RUNNING FROM THE FUEL LINES.</p> <p>This event was also documented as event 93223002 as follows:</p> <p>Durning the overhaul of NR 1SS Gen the overspeed assy and mounting bracketfell on side of engine and unknowingly shorted across the start solenoid. Itwas also making contact with the fuel on supply and return lines. Thegrounding out of the 240 starting system cause the fuel line to heat up andmelt the rubber interior allowing fuel to run through the steel jacket. At thepoint one of the engineers moved the overspeed assy and cause a spark whichignighted the fuel running from the fuel lines.</p>	<p>ENSURE 24V START SYSTEM DEENERGIZED/ISOLATED. PRESENTLY THERE IS NO WAY OFISOLATING THE #1&2 S/S GENERATORS 24V START SYSTEM.*****</p> <p>This event was also documented as event 93223002 as follows:</p> <p>Insure 24 volt starting system is deenergized/isolated. Presently there is noway of isolating the #1+2 SS generators 24 volt start system.*****</p>	<p>PERSONNEL ERROR IN THAT THE SUPERVISOR AND PERSONNEL WORKING ON EQUIPMENTDIDNT ENSURE POWER WAS SECURED/ISOLATED TO 24V STARTING SYSTEM.*****</p> <p>This event was also documented as event 93223002 as follows:</p> <p>Personnel error in that supervisor and personnel working on equipment didn'tsecure (24 volt starting system).*****</p>

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					<i>Fire limited to one compartment</i>
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event: MISREP14

Event Number: 93293082 (MISREP14)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil	Engine room
Cause	Personnel failed to secure/isolate the 24V starting system prior to work. An overspeed assembly and mounting bracket fell on the engine and shorted across the start solenoid, which caused the fuel line to melt and release fuel oil	
Ignition Source	Movement of overspeed assembly causing a spark	
Detection		Crew
Release Isolation		None
Fire Suppression		None
Impact on Propulsion		None
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	Ensure that the 24V system is deenergized/isolated	This event will probably require a design change (currently there is no way to isolate the 24V starting system for two generators)

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EVENT: 93341001

DESCRIPTION	ACTIONS	CAUSES
0902 RECEIVED A HIGH CRANKCASE PRESSURE ALARM ON THE PORT MDE. 0903 NOTICED OIL DISCHARGING FROM EXHAUST ELBOW. 0905 SECURED PORT MDE. 0915 WHILE INVESTIGATING CAUSE FOR ALARM, NOTICED ABNORMAL HEAT DISCHARGING FROM PORT STACKHOUSE, ALSO PAINT DISCOLORATION ON INBOARD EXTERIOR OF STACKHOUSE. 0925 APPLIED SMALL QUANTITY OF POTABLE WATER INTO PORT STACK TO SUFFOCATE FIRE, APPLIED EXTERNAL COOLING WATER TO MUFFLER, INSULATION AND STACKHOUSE. MONITORED TEMPERATURE AND ALLOWED FIRE TO BURN OUT WITH NO ADDITIONAL DAMAGE TO ENGINE OR SUPERSTRUCTURE. 1125 MOORED PORT PIER D2 USCG GRU KEY WEST, FL.	REPLACED #1 LEFT BANK CYLINDER LINER, PISTON POWER PACK, CYLINDER HEAD, FWD OUTBOARD TURBOCHARGER, INJECTOR ON PORT MDE, ALSO REPAVED PORT MDE MUFFLER AND INSULATION IN PORT STACKHOUSE. ****	EXPERIENCED VALVE TRAIN FAILURE ON THE #1 LEFT BANK HEAD ON THE PORT MDE. VALVE PIECES DISCHARGED THROUGH EXHAUST MANIFOLD HAD CONTACTED THE EXHAUST TURBINE WHEEL ON THE FWD OUTBOARD TURBOCHARGER. THIS CAUSED AN IMBALANCE AND DAMAGE TO THE TURBOCHARGER OIL SEAL, ALLOWING ENGINE OIL UNDER PRESSURE TO BE DISCHARGED INTO THE EXHAUST SYSTEM AND MUFFLER. THIS RESULTED IN THE FIRE IN THE MUFFLER AND EXHAUST STACK.*

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					<i>Fire limited to one compartment</i>
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event: MISREP15

Event Number: 93341001 (MISREP15)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lubrication oil (turbocharger)/engine room	
Cause	Valve train failure caused valve pieces to be discharged through the exhaust manifold, contacting the exhaust turbine wheel. This caused an imbalance and damage to the turbocharger oil seal, allowing engine oil under pressure to be discharged into the exhaust system	
Ignition Source	Hot exhaust system	
Detection	High engine crankcase pressure alarm. Technician later noticed oil discharging from exhaust elbow	
Release Isolation	Crew secured the engine	
Fire Suppression	Applied water into port stack to suffocate fire. Also applied external cooling water to muffler, insulation, and stack house	
Impact on Propulsion	Port main diesel engine was secured; partial loss of propulsion	
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	Report indicates that several parts of the engine (cylinder liner, piston power pack, cylinder head, turbocharger, etc.) were replaced	

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EVENT: 93343010

DESCRIPTION	ACTIONS	CAUSES
EOW WAS NOTIFIED OF A BURNING SMELL AND SMOKE COMING FROM#3 MDE INBOARD TURBOCHARGER. DURING VISUAL INSPECTION BY EOW, TOB WATCH, AND OILER WITH CO2 ATSCENE, THE TURBO BALNKET CAUGHT FIRE IN A SMALL AREA NEAR THE EXHAUST SECTION. FIRE WAS EXTINGUISH IMMEDIATELY AND#3 MDE SHUT DOWN. INSPECTION REVEALED BEARING SEIZURE AND EXCESSIVE WEAR ON SHAFT.	EOW SET A FIRE WATCH ON TURBO CHARGER AT THE SIGN OF SMOKE AND IMMEDIATELY PUTOUT THE FIRE WHEN STARTED AND SECURE THE ENGINE.*****	MATERIAL FAILURE IN TURBO CHARGER GENERATED EXCESSIVE HEAT AND SHAFT SEAL LEAKA SMALL AMOUNT OIL WHICH CAUGHT FIRE.*****

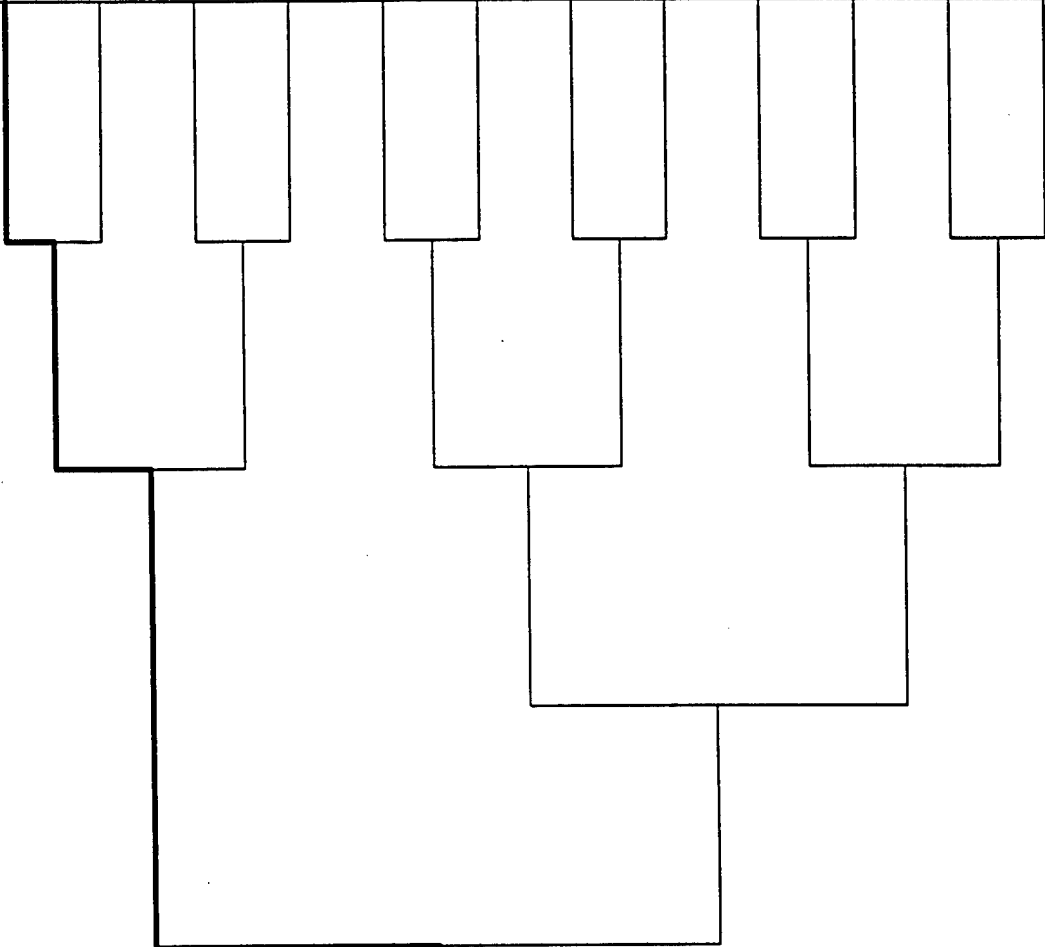
Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP16</div>					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					<i>Fire limited to one compartment</i>
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 93343010 (MISREP16)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location		Lube oil/engine room
Cause	Material failure (seized bearing and excessive wear on shaft) generated excessive heat, resulting in a turbocharger shaft seal oil leak	
Ignition Source		Hot surface on shaft/turbocharger
Detection	Crew noticed burning smell and smoke coming from #3 main diesel engine inboard turbocharger	
Release Isolation	Engine was secured	
Fire Suppression		Portable CO ₂
Impact on Propulsion	#3 main diesel engine was shut down; partial loss of propulsion	
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	None mentioned	

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EVENT: 94011002

DESCRIPTION	ACTIONS	CAUSES
EE NUT SECURING THE TOP CAP ON A RACOR FUEL FILTER ASSEMBLY VIBRATED LOOSECREATING A FUEL LEAK. WATCHSTANDERS SECURED #2MDE, BROKE OUT FIREFIGHTINGEQUIPMENT AND VESSEL SET THE GENERAL EMERGENCY BILL. WATCHSTANDERS RINSEDTHE FUEL SPILL FROM THE SIDE OF THE ENGINE AND INTO THE BILGE WITH AFFF HOSE.SPILL WAS APPROX 2 GALLONS OF DIESEL FUEL. FILTER WAS REPAIRED AND LEAKSTOPPED. ENGINE WAS TESTED WITH NO FURTHER INCIDENT.	FOLLOW MANUFACTURERS SPECIFICATIONS WHEN TIGHTENING THE TEE NUTS. INSPECTFREQUENTLY,*** **	EE NUT NOT ADEQUATELY TIGHTENED OR CHECKED AT FREQUENT INTERVALS. PMS DOESNOT REQUIRE CHECKING THIS AFTER SERVICING. WATCHSTANDER TRAINING WASCONSIDERED ADEQUATE IN DEALING WITH THE EMERGENCY, ALL CORRECT ACTIONS WERETAKEN.***

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence	
					No consequences of Interest	
						Human casualty(ies)
						Vessel loses propulsion and/or steering
						Human casualty(ies); vessel loses propulsion and/or steering
						Fire limited to one compartment
						Human casualty(ies); fire limited to one compartment
						Vessel loses propulsion and/or steering; fire limited to one compartment
						Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
						Fire in multiple compartments
						Human casualty(ies); fire in multiple compartments
						Vessel loses propulsion and/or steering; fire in multiple compartments
						Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event: MISREP17

Event Number: 94011002 (MISREP17)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	The tee nut securing the top cap on a fuel filter assembly vibrated loose, resulting in a fuel leak (approximately 2 gallons). (The tee nut was not adequately tightened or checked at frequent intervals; preventive maintenance system did not require checking this after servicing)	
Ignition Source		No ignition occurred
Detection		Crew probably saw the leak
Release Isolation	Watchstanders secured #2 main diesel engine	
Fire Suppression		None required - no fire
Impact on Propulsion	#2 main diesel engine was shut down; partial loss of propulsion	
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	<p>Filter was repaired and leak stopped. Fuel was rinsed from side of engine</p> <p>Report recommends following manufacturer's specifications when tightening the tee nuts</p> <p>Report also recommends more frequent inspections</p>	

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EVENT: 94031001

DESCRIPTION	ACTIONS	CAUSES
<p>MEMBER A AND MEMBER B WERE ASSIGNED TO FIX A LEAK IN THE MESSDECK HEATER LINE. HEATER SYS HAD TO BE FLUSHED FREE OF FLUID TO REPAIR MESSDECK HEATER. MEMBER B DISCONNECTED THE RETURN LINE TO THE ENGINE AT THE VALVE AND LEFT RETURN VALVE OPEN SO FLUID WOULD DRAIN INTO THE BILGE. SUPPLY LINE WAS LEFT CONNECTED AND VALVE OPEN. WHILE THESE MEMBERS WORKED, AN INSPECTION WAS BEING DONE BY MEMBER C AND VISITING MEMBER D. MEMBER A HAD DISCONNECTED THE SUPPLY LINE FROM THE MESSDECK HEATER AND HAD AN AIRHOSE WITH APPROX 100 PSI SUPPLIED TO IT. THEY WERE READY TO FLUSH THE SYS. MEMBER A PRESSURIZED THE SYS WITH AIR, MEMBERS C AND B OBSERVED THE SYS PRESSURIZE AND STARTED TO SPRAY ETHYLENE GLYCOL FROM THE EXPANSION TANK OVERFLOW TUBE AND RETURN LINE AT THE BASE OF THE ENGINE, WHICH WAS DISCONNECTED FROM THE RETURN VALVE AND POINTED UP. MEMBER C TOLD MEMBER B TO SECURE SUPPLY VALVE TO ENGINE. AS HE SECURED VALVE HE WAS SPRAYED IN EYES AND ON CLOTHES. MEMBER B WAS LED TO AN EMERG EYE WASH STATION AND ASSISTED BY A STATION EMT AND LATER BROUGHT TO THE LOCAL HOSPITAL ER.</p>	<p>MEMBERS A AND B WERE COUNSELED ON THE PROPER PROCEDURES FOR THIS JOB. THE IMPORTANCE OF SAFETY GEAR HAS BEEN STRESSED. A LOW PRESSURE NOZZLE (UP TO 30PSI) HAS BEEN PURCHASED TO USE.</p>	<p>THERE ARE THREE ERRORS WHICH LED TO MISHAP: 1. THERE WAS NO USE OF SAFETY GEAR (EYE PROTECTION). 2. THE SUPPLY VALVE TO THE ENGINE WAS LEFT OPEN, CAUSING FRESH WATER SYS TO CIRCULATE AND EMPTY OUT OF THE DISCONNECTED RETURN LINE. 3. THE AIR PRESSURE USED WAS EXCESSIVE FOR THIS JOB.</p>

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
				Vessel loses propulsion and/or steering; fire in multiple compartments	
				Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments	

Event: MISREP18

Event Number: 94031001 (MISREP18)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Heater system/deck	
Cause	Crew was flushing all liquid from the system to repair a leak. One crew member used 100-psig air supply to help purge the system, but other members observed ethylene glycol spraying out the overflow tube for the expansion tank. While attempting to stop the spray, a crew member was sprayed in the eyes and on clothing	
Ignition Source		No ignition occurred
Detection		Crew
Release Isolation		Crew secured air supply
Fire Suppression		None required - no fire
Impact on Propulsion		None
Impact on Steering		None
Human Casualty	One crew member was sprayed in the eyes and was taken to the emergency room at a local hospital	
Corrective Action to Prevent Recurrence	Crew members were counseled on the proper procedures for this activity. The importance of wearing safety gear was stressed. Also, a low pressure nozzle (about 30 psig) was purchased to use during similar activities	

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EVENT: 94079005

DESCRIPTION	ACTIONS	CAUSES
<p>During a routine round, the EOW detected a strong smell of diesel fumes in the engineroom. The watchstander notified the MKC and both crewmembers investigated. They discovered fuel shooting out from the filter on the #2 SSDG. The diesel fuel was coming from the secondary fuel filter on the outboard side of the port SSDG. The SSDG was immediately secured. Approx 5 gal of fuel collected in the bilge. After further investigation, MKC discovered an obvious failure by locating a 3/4" crack in the base of the cylindrical filter. Supply/Stock information on this type filter is as follows: NSN:2910-00-157-0650, Manufacturer: AC Rochester, PN:TP877, Cage/mfg: 70040, Cage/prm: 62860. The filter was replaced, however the replacement filter failed in a similar manner. Orig has not determined if the HIPO incident was caused by defective filter or SSDG problem.</p>	<p>Filter changed out using different brand and #1 SSDG being closely monitored. SUSPEND USE OF THIS TYPE OF FILTER UNTIL CAUSE OF INCIDENT IS CLEAR.*****</p>	<p>Equipment failure: Fuel filter.*****</p>

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence

Event Number: 94079005 (MISREP19)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	Equipment failure (fuel filter cracked), resulting in release of fuel oil. Approximately 5 gallons of diesel fuel collected in the bilge. The filter was replaced. However, the replacement filter failed in a similar manner	
Ignition Source		No ignition occurred
Detection	During a routine round, a crew member detected a strong smell of diesel fumes in the engine room	
Release Isolation	The #2 ship service diesel generator was shut down	
Fire Suppression		None required - no fire
Impact on Propulsion	The #2 ship service diesel generator was secured; partial loss of propulsion	
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	Filter changed out using a different brand. They will suspend the use of this type of filter until the cause of the incident is clear	

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EVENT: 94079019

DESCRIPTION	ACTIONS	CAUSES
While mooring CG41316, the port engine low lube oil alarm sounded and the crew observed smoke coming from the engine room vents. Upon investigation the crew found that the port turbocharger lagging was on fire, they immediately extinguished the fire with the onboard CO2 extinguisher and removed the smoldering lagging. Investigation revealed defective lube oil supply line leading to the turbocharger.	Replaced defective lube oil supply line, cleaned up residual oil and replaced turbo lagging. *****	Equipment failure: The lube oil supply line was cracked leading into the turbocharger and was leaking oil onto the turbo charger housing. Line was replaced on 13 NOV 89 and still had 8 months of serviceable life remaining according to Naval Engineering Manual's Requirement of 5 year change out. ***

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MISREP20					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					<i>Fire limited to one compartment</i>
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 94079019 (MISREP20)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil/engine room	
Cause	The lube oil supply line leading into the turbocharger was cracked and leaked oil onto the turbo housing. (The turbocharger lagging was on fire)	
Ignition Source		Hot surface
Detection	Port engine low lube oil alarm, and crew observation of smoke coming from engine room vents	
Release Isolation	The diesel engine was immediately secured	
Fire Suppression	Onboard CO ₂ extinguisher	
Impact on Propulsion		None
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	Replaced the defective lube oil supply line, cleaned up the residual oil, and replaced the turbo lagging The report also noted that the line still had 8 months of serviceable life (according to a recommended 5-year change out schedule)	

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EVENT: 94112024

DESCRIPTION	ACTIONS	CAUSES
While conducting becce drills the CPP oil to servo line ruptured spilling 20gallons of 10W30 lube oil during the initial safety inspection of the engineroom an ECCT member noticed a fresh odor of oil and detected a L/O spray inthe vicinity of the #2 reduction gear. E/R throttleman took control, declutched, and secured the #2 MDE. EOW contacted OOD notifying of actual L/O spray, the #2 reduction gear electric L/O pump was secured. ECCT membersounded #2 CPP sump and determined the casualty to be the ruptured CPP oil toservo guage line. E/R throttleman secured #2 electric Cpp pump. Rags were usedto clean up the oil and the #2 MDE was back on line within 1 hour of theincident.	CPP oil to servo guage line was double flared and reinstalled. Added 27gallons of 10W30 L/O to the #2 CPP reservoir.*****	Copper tube flare fitting failure.*****

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP21</div>	<div></div>	<div></div>	<div></div>	<div></div>	No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 94112024 (MISREP21)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil/engine room	
Cause	Copper tube flare fitting failure, spilling approximately 20 gallons of lube oil	
Ignition Source		No ignition occurred
Detection	During initial safety inspection, crew noticed a fresh odor of oil and detected an oil spray in the vicinity of the #2 reduction gear	
Release Isolation	#2 main diesel engine was shut down and the #2 reduction gear electric pump was secured	
Fire Suppression		None required - no fire
Impact on Propulsion	#2 main diesel engine was shut down; partial loss of propulsion	
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	Gauge line was double flared and reinstalled. Added 27 gallons of lube oil to reservoir	

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EVENT: 94138005

DESCRIPTION	ACTIONS	CAUSES
WHILE UNDERWAY IN POSN:41-14.26N,072-34.6W. THE SHIP SLOWED SUDDENLY WITH A LOSS OF SHAFT RPM, BUT NO LOSS OF ENGINE R.P.M. DINC PIPED EDN TO THE BRIDGE AND EXPLAINED SITUATION. EPO AND MKZ INVESTIGATED. EPO FOUND 40 SPRAYING FROM THE REAR FO THE RED GEAR FILTER COVER BASKET. EPO SEW RED ENGINE, NOTIFIED BRIDGE SET ANCHOR. SHIPS FORCE CLEANED UT AND REMOVED SPO;;ED OIL FROM ENGINE ROOM, A NEW RED GEAR FILTER COVER GASKET WAS INSTALLED. APPRO. 9 GALS 40 WAS ADDED TO RES GEAR. ENGINE WAS STARTED. GEAR TESTED SATISFACTORILY.	A NEW 40 FILTER COVER GASKET WAS INSTALLED. UNIT WILL UNSTALL FLANGE SHIELDING ON THE RED GEAR FILTER COVER TO MINIMIZE OIL SPRAY IN THE EVENT OF ANOTHER GASKET FAILURE. ****	THE RED GEAR FILTER COVER GASKET FAILED. MATERIAL FAILURE DESIGN*****

Event Number: 94138005 (MISREP22)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Gear oil/engine room	
Cause	Reduction gear filter cover gasket failed (material failure design)	
Ignition Source		No ignition occurred
Detection	The ship slowed because of shaft rpm loss. Investigation found spray coming from reduction gear filter cover basket	
Release Isolation	Crew secured the engine	
Fire Suppression		None required - no fire
Impact on Propulsion	Loss of propulsion. Anchor was set	
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	<p>A new filter cover gasket was installed. Crew cleaned up/removed spilled oil from the engine room</p> <p>Unit will install flange shielding on the reduction gear filter cover to minimize oil spray in the event of another gasket failure</p>	

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EVENT: 94151009

DESCRIPTION	ACTIONS	CAUSES
Unit was underway in transit to homeport from Savannah Georgia at the speed of approximately 27 knots, when a crankcase explosion occurred on #2 main diesel engine. The crank case cover (A-8) was broken over the MDE inboard starter spraying oil on the deck plates and starter. The Eow, who was in the engineroom at the time, observed sparks and secured #2 MDE. Immediately using the emergency stop cable. Very little smoke was observed as lube oil was discharged into the bilge. The EOW broke out a PKP fire extinguisher and discharged it to the deck plates at the started due to sparks. No fire started, believed sparks came from metal pieces discharged from the engine. The engine was secured, oil was cleaned up and unit back U/W on #1 MDE. Five minutes prior to the explosion a lube oil sample was taken and the lube oil level was satisfactory. The cylinder temperature spreads from ten previous # rounds indicated a spread from 110 to 155 degrees. The speed of the engine at the time of the explosion occurred was about 1450 RPM, which was verified by a hand tach. The fuel oil dilution was zero with .5% thickening.	Pending results of the investigation.*****	Unable to determine the exact cause; investigation is still pending. #2 Main diesel engine hours are 10235.13.*****

Release of pressurized or flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP23</div>	<div></div>	<div></div>	<div></div>	<div></div>	No consequences of Interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 94151009 (MISREP23)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil/engine room	
Cause	Crankcase explosion on #2 main diesel engine, resulting in oil spray on the deck plates and starter	
Ignition Source		No ignition occurred
Detection	Crew member was in the engine room at the time of the crankcase rupture (observed explosion and sparks)	
Release Isolation	Crew secured #2 main diesel engine	
Fire Suppression	None required - no fire. However, crew discharged fire extinguisher on the deck plates at the sparks (which may have prevented a fire)	
Impact on Propulsion	#2 main diesel engine was secured. Partial loss of propulsion	
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	None (still pending results of the investigation)	

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EVENT: 94153013

DESCRIPTION	ACTIONS	CAUSES
APPROX 1 MINUTE AFTER STARTING 2 SSDG EXPERIENCED MAJOR LUBE OIL LEAK FROM LUBE OIL LINE TO THERMOSTATIC BYPASS VALVE. 30 GALS OF LUBE OIL SPRAYED ONTO SSDG, FWD END OF 2 MDE AND SURROUNDING AREA. 2 SSDG AND 2 MDE IMMEDIATELY SECURED, MSFD SET. SPRAYED LAYER OF AFFF IN SURROUNDING AREA OF LEAK, DECK PLATES AND BILGE. BROKE OUT AND CARRIED EEBDS. PKP EXTINGUISHER BROKE OUT AND MANNED. PERSONNEL WITH MSFD BILGETS IN ECC WERE CALLED DOWN AS DIRECTED/NEEDED BY EOW. AFTER LAYER OF FOAM INTACT BROKE OUT HIGH PRESSURE SPRAYER TO REMOVE OIL TO BILGE AND THEN OILY WASTE TANK.	*****	CAUSE OF LEAK WAS IMPROPER GASKET REPLACED WITH SECOND PROPER GASKET. ALTHOUGH ADDITIONAL CORRECT GASKETS ON BOARD, REPAIR PERS THEN SUBSTITUTED ANOTHER THICKER GASKET WITHOUT VALIDATING SPECS. IMPROPER GASKET HELD FOR SEVERAL DAYS THEN CATASTROPHICALLY FAILED.***

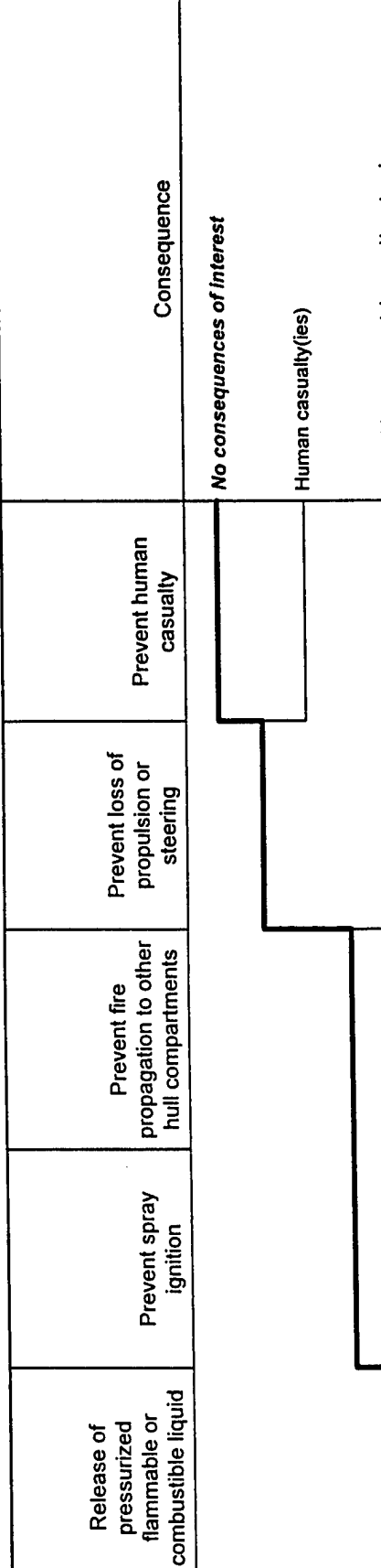
Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP24</div>	<div></div>	<div></div>	<div></div>	<div></div>	No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 94153013 (MISREP24)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil/engine room	
Cause	Incorrect gasket was used after recent repair on the lube oil line to thermostatic bypass valve. The incorrect gasket held for several days but then failed catastrophically	
Ignition Source		No ignition occurred
Detection	Rupture occurred approximately 1 minute after starting #2 ship service diesel generator	Crew member was in engine room when the lube oil line failed
Release Isolation	#2 ship service diesel generator and #2 main diesel engine were secured	
Fire Suppression		No fire occurred (however, after approximately 30 gallons of lube oil sprayed out, a crew member sprayed AFFF on area of leak)
Impact on Propulsion	#2 main diesel engine was secured. Partial loss of propulsion	
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	None mentioned. However, the report suggests that repair personnel used the incorrect type of gasket when the correct type was available (failure to validate the specification)	

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EVENT: 94175011

DESCRIPTION	ACTIONS	CAUSES
Blubbler was operating when a loud bang occurred. EOW noticed the air pressure dropped to zero, Investigated unit and found engine still running with the clutch engaged. Oil was pooling under air compressor blower on deck. EOW secured bubbler. Further investigation revealed several lube oil lines had ruptured due to corrosion and vibration.	NESU NY will have side doors installed on bubbler unit after the 94 ice season to allow access to the affected area. With the exception of WTGB 107 all other WTGB'S have side doors on the bubbler unit. ****	The design of the bubbler housing does not allow access to the air compressor unit. L/O supply lines were ruptured due to corrosion and vibration. Insufficient L/O caused the blower to overheat and disintegrate. ****

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence	
					No consequences of Interest	
						Human casualty(ies)
						Vessel loses propulsion and/or steering
						Human casualty(ies); vessel loses propulsion and/or steering
						Fire limited to one compartment
						Human casualty(ies); fire limited to one compartment
						Vessel loses propulsion and/or steering; fire limited to one compartment
						Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
						Fire in multiple compartments
						Human casualty(ies); fire in multiple compartments
						Vessel loses propulsion and/or steering; fire in multiple compartments
						Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event: MISREP25

Event Number: 94175011 (MISREP25)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil/bubbler air blower	Location unclear
Cause	Lube oil supply lines ruptured because of corrosion and vibration (oil was pooling under the air compressor blower on deck). Insufficient lube oil caused the blower to disintegrate	
Ignition Source		No ignition occurred
Detection	Crew heard a loud bang (the air blower failure) and noticed the air pressure drop to zero	
Release Isolation	Crew secured bubbler	
Fire Suppression		None required - no fire
Impact on Propulsion		None
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	Will install side doors on bubbler unit to allow access to the affected area. All other units have side doors	

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EVENT: 94197009

DESCRIPTION	ACTIONS	CAUSES
<p>HPU ENERGIZED IN PREPARATION TO LAUNCH RH1. UNUSUAL HYDRAULIC HAMMER SOUND HEARD FROM HYDRAULIC PIPING BELOW DECKS. WHEN BMOW (GM1) ATTEMPTED TO UNCRADLERHI, SPD TOOK SLACK OUT OF CABLE, BUT WOULD NOT RAISE RH1. BMOW AND SAFETY OBS(LTJG) CHECKED HPU IN HELO SHACK AND DISCOVERED LOW OIL ALARM. HYDRAULIC FLUID WAS THEN SEEN RUNNING ACROSS THE FLIGHT DECK, FROM STBD TO PORT. BMOW SECURED HPU AND NOTIFIED BRIDGE AND MAIN CONTROLL. BOAT LOWERING DETAIL, DECK FORCE, AND AUX DIVISION RESPONDED WITH SORBENT PADS, BOOMS, PILLOWS, AND SWEEPS. SPILL CONTAINED TO FORWARD TEN FEET OF FLIGHT DECK AND STBD BOT DECK VIC OF THE CRESCENT DAVIT CONTROL STATION. INSPECTED CONTROL STATION AND DISCOVERED FLEX HOSE FOR HYDRAULIC FLUID SUPPLY TO CRESCENT DAVITS HAD RUPTURED AT FITTING. SPILLED OIL ABSORBED AND PLACED IN PLASTIC BAGS FOR DISPOSAL. LOST 60 GAL OF 2110 L/O, BELIEVE LESS THAN ONE-HALF GALLON WENT OVERBOARD DUE TO CANVAS COVER ON ER CONTROL STATION WHICH DEFLECTED OIL TO THE DECK AND QUICK PLACEMENT OF SORBENT PADS OVER SCUPPERS. IF FAILURE HAD OCCURRED WHILE EITHER BOAT SUSPENDED FROM DAVITS, HPO FOR DAMAGE AND PERSONAL CASUALTY.</p>	<p>1. CHECKED FLEXIBLE HOSES ONBOARD OF THE SAME TYPE WHICH WERE RENEWED AT THE SAME TIME, TWO TOTAL. ONE SUPPLY LINE, FAILED, AND ONE RETURN LINE. BOTH ASSEMBLIES WERE RENEWED. 2. ASSEMBLING THIS SIZE OF FLEXIBLE HOSE AND FITTINGS WITH SEALANT IN GAP BETWEEN WIRE BRAID AND COLLAR TO PREVENT WATER ENTRY AND CORROSION.</p>	<p>THE WIRE BRAID AT THE HOSE FITTING WAS CORRODED FROM EXPOSURE TO THE ELEMENTS AND FAILED UPON START-UP PRESSURIZATION. FOR THIS PARTICULAR HOSE AND FITTING, THE MANUFACTURER REQUIRES THE RUBBER SHEATH BE REMOVED FROM AROUND THE WIRE BRAID TO FIT THE COLLAR ASSEMBLY. WATER COLLECTED IN THE GAP BETWEEN THE COLLAR AND WIRE BRAID, CORRODING IT. THIS HOSE IS EXPOSED TO WEATHER. IT IS ALSO THE MAIN SUPPLY LINE TO THE CRESCENT DAVITS, AND SUBJECTED TO MAXIMUM PRESSURE FROM THE HPU. THE FAILED PSE WAS LAST RENEWED IN MAR 92.</p>

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP26</div>	<div></div>	<div></div>	<div></div>	<div></div>	No consequences of Interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 94197009 (MISREP26)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Hydraulic oil/flight deck	
Cause	Hose fitting was corroded from water collecting in the gap between the collar and wire braid and failed upon startup pressurization. (The manufacturer requires the rubber sheath be removed from the wire braid to fit the collar assembly)	
Ignition Source		No ignition occurred
Detection	Crew heard hydraulic hammer below decks. Upon inspection, the crew found low oil alarm	
Release Isolation	Hydraulic power unit was secured. Sorbent pads, booms, pillows, and sweeps were used to contain oil. Approximately 60 gallons of hydraulic oil was lost	
Fire Suppression		None required - no fire
Impact on Propulsion		None
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	Checked flexible hoses of the same type, which had been renewed at the same time. Will assemble this type of flexible hose/fitting with sealant between the wire braid and collar to prevent water entry/corrosion	The oil spray could have been much more broadspread; however, a canvas cover over the control station deflected the oil to the deck

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EVENT: 94209003

DESCRIPTION	ACTIONS	CAUSES
VSL WAS PREPARED TO GET UNDERWAY FOR LOCAL OPERATION. 1100 COMMENCED STEERING TEST IN DUAL PUMP MODE. NR1 STEERING PUMP RELIEF VALVE O-RING FAILURE OCCURRED RESULTING IN APPROX. 3 GAL HYDRAULIC OIL ON DECK. SET GENERAL EMERGENCY. ELECTRICAL POWER WAS ISOLATED AND FIRE PARTY STANDING BY WHILE CLEANUPS COMMENCED. 1123 SECURED GE. ELECTRICAL POWER RESTORED. AUX DIV CHANGED OUT O-RING AND CONDUCTED TESTS. 1145 STEERING TEST SAT IN DUAL PUMP MODE. 1203 VESSEL U/W. 1259 MAJOR LUBE OIL LEAK AFT STEERING, CAUSE NR1 STEERING PUMP RELFVLV O-RING FAILURE. APPROX. 20-25 GAL HYDRAULIC OIL ON DECK. SET EG AND SECURED BOTH STEERING PUMPS. ENERGIZE BOTH FIRE PUMPS. ELECTRICAL FIRE ISOLATED TO THE SPACE AND FIRE PARTY DRESSED OUT STANDING BY. OIL CLEANUPS WERE EFFECTED. 1310 VSL ANCHORED. 1325 SECURE GE. ISOLATED NR1 STEERING PUMP AND STARTED NR2 STEERING PUMP. LEAK TEST SAT. 1346 VSL UNDERWAY. DUE TO SATURATION OF THREE BREAKERS ON EMERGENCY SWITCHBOARD, POWER TO EMERGENCY BOARD WAS SECURED AWAITING REPAIR.	BOLTS SHORTENED TO CORRECT LENGTH TORQUED TO SPEC. TWO DAMAGE BREAKERS ON EMERGENCY SWITCHBOARD WERE REPLACED. CASUALTY POWER SYS BREAKER HAS BEEN ORDERED AND IS CURRENTLY OOC. ****	DURING MAINTENANCE TO SYSTEM AND AFTER CONFERRING WITH MANUFACTURER, LOCK WASERS WERE REMOVED FROM THE VALVE BODY ALLOWING BOLTS (WHICH WERE LATER DETERMINED TO BE OVERSIZED) TO BOTTOM OUT AND NOT SUFFICIENTLY TIGHTEN THE VALVE BODY TO THE FOUNDATION. LOCK WASHERS AND OVERSIZED BOLTS WERE PLACED ON PUMP AT UNKNOWN TIME PRIOR TO ASSIGNMENT OF ONBOARD PERSONNEL TO UNIT. **

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP27</div>	<div></div>	<div></div>	<div></div>	<div></div>	No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					<i>Vessel loses propulsion and/or steering; fire limited to one compartment</i>
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 94209003 (MISREP27)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Hydraulic oil (steering system)	Steering pump room
Cause	During maintenance (and with concurrence from the manufacturer), lock washers were removed from valve body, allowing bolts to bottom out and not sufficiently tighten the valve body to the foundation. The bolts were later determined to be oversized	
Ignition Source		It is not clear that the spray ignited, but the report does mention that electrical equipment was soaked. If there was ignition, it may have occurred in the circuit breakers on the emergency switchboard
Detection		Crew
Release Isolation	Crew secured both steering pumps	
Fire Suppression	Extinguished by firefighting crew	
Impact on Propulsion		None
Impact on Steering		Loss of steering. Both steering pumps were secured
Human Casualty		None
Corrective Action to Prevent Recurrence	Bolts were shortened to correct length and torqued to specification. Two damaged circuit breakers on the emergency switchboard were replaced	

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EVENT: 94210008

DESCRIPTION	ACTIONS	CAUSES
WHILE STARTING THE EDG FOR A TEST WITH A MODIFIED FUEL ROD INSTALLED ON THE ENGINE, THE EDG WENT IMMEDIATELY TO AN OVERSPEED CONDITION. WHILE TRYING TO DISCONNECT THE LINKAGE FROM THE ACTUATOR, THE ENGINE BEGAN TO COME APART (LOUD METALLIC KNOCK) SO PERSONNEL ABANDONED THE COMPARTMENT. AS THEY REACHED THE FORWARD WTD IN THE COMPARTMENT AN EXPLOSIVE SOUND WAS HEARD AND THE #12 CON ROD BROKE FREE FROM THE CRANKSHAFT JOURNAL EXITING THE BLOCK ON THE INBOARD SIDE OF THE ENGINE IN THE VICINITY OF THE STARTING MOTORS. THE STEERING ROOM WAS IMMEDIATELY FILLED WITH AN OIL VAPOR MIST AND THE PRELUBE PUMP CONTINUED TO DISCHARGE OIL ONTO THE DECK. THE OIL MIST WAS QUICKLY REMOVED BY THE INSTALLED VENTILATION AND PERSONNEL IN THE COMPARTMENT SECURED THE PRELUBE PUMP. THE GENERAL EMERGENCY BILL WAS SET, AFFH HOSES WERE LAID OUT AND CLEANUP ON THE OIL WAS COMENCED BY PERSONNEL FROM REPAIR III, THE STEERING ROOM AND MACHINERY REPAIR. THE GENERAL EMERGENCY BILL WAS SECURED AFTER ALL LUBE OIL HAD BEEN REMOVED.	Personnel who installed the modified fuel rod were counselled on how the modification they made caused the engine overspeed and the fact that it probably should not have been done without approval of a Woodward technical representative or MLC(VR).***	The newly fabricated fuel rod, connecting the actuator and fuel rack, bound against the torsional spring on the actuator terminal shaft, as the actuator was tried to come to the minimum fuel position. Because the actuator could not achieve the minimum fuel position, there was no way to restrain the normal engine surge created during engine start by the actuator's initial maximum fuel position.*

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

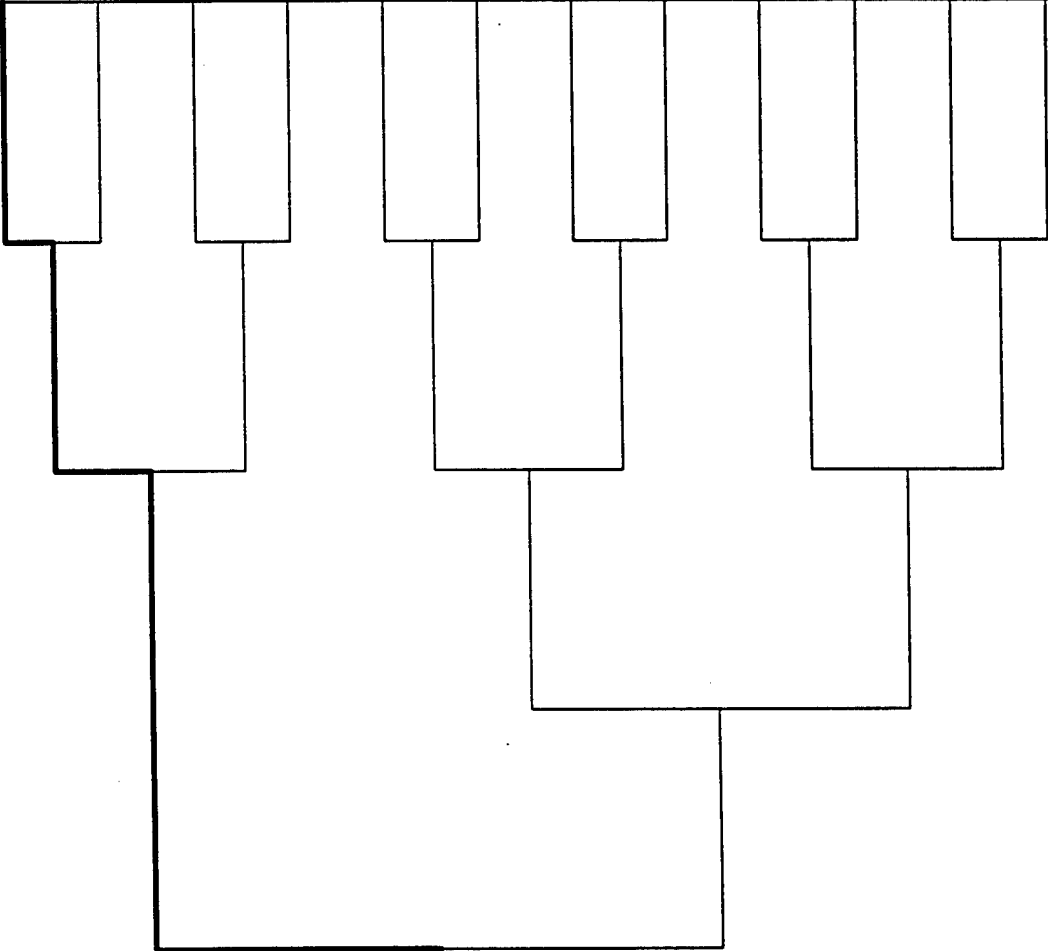
Event: MISREP28

Event Number: 94210008 (MISREP28)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil for emergency diesel generator/steering room	
Cause	While starting the generator for a test with a modified fuel rod installed on the engine, the generator went into an overspeed condition and failed catastrophically (ruptured). An improperly modified fuel rod bound against a spring on the actuator shaft, preventing the actuator from reaching the minimum fuel position; the normal engine surge during startup could not be restrained	
Ignition Source		No ignition occurred
Detection		Crew heard loud metallic knock followed by explosive sound
Release Isolation	Prelube pump secured	
Fire Suppression		None required - no fire
Impact on Propulsion		None
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	Crew was counseled on the repair error, and modifications to fuel rod should only be made with approval of a Woodward technical representative	

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EVENT: 94220004

DESCRIPTION	ACTIONS	CAUSES
While at anchor at approximately 0600 the EOW MK2 discovered that number 1 ship service generator (ssg) had a severe fuel oil (f/o) leak on the inboardside. F/O was spraying from the secondary F/O filter. The spray was directed on the main switch board.	EOW covered the spraying F/O to direct it into the bilge. The OOD sounded general emergency and the main space fire doctrine was set. Electrical load was shifted to #2 gen. F/O filter was removed and replaced with A/C Rochester P/N TP877 which is described in ref. B as questionable. #1 was tagged for emergency use only. Decisive initial action coupled with quick response crewwide served to minimize the potential for disaster. Vessel returned to operational mission.	Number 1 ssg's secondary fuel oil filter part number IR 7040 ruptured. The filter was the one described in ref B as correct. This filter was changed less than 24 prior to incident. No flange shielding was installed on any of the spin on filters. ****

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
	<i>No consequences of interest</i>				
	Human casualty(ies)				Human casualty(ies)
	Vessel loses propulsion and/or steering				Vessel loses propulsion and/or steering
	Human casualty(ies); vessel loses propulsion and/or steering				Human casualty(ies); vessel loses propulsion and/or steering
	Fire limited to one compartment				Fire limited to one compartment
	Human casualty(ies); fire limited to one compartment				Human casualty(ies); fire limited to one compartment
	Vessel loses propulsion and/or steering; fire limited to one compartment				Vessel loses propulsion and/or steering; fire limited to one compartment
	Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment				Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
	Fire in multiple compartments				Fire in multiple compartments
	Human casualty(ies); fire in multiple compartments				Human casualty(ies); fire in multiple compartments
	Vessel loses propulsion and/or steering; fire in multiple compartments				Vessel loses propulsion and/or steering; fire in multiple compartments
	Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments				Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event: MISREP29

Event Number: 94220004 (MISREP29)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil	Engine room
Cause	Rupture of #1 ship service diesel generator's secondary fuel oil filter	Because the filter had been replaced 24 hours prior to the incident, the filter was probably either defective or improperly installed
Ignition Source		No ignition, although spray was directed onto main switchboard
Detection	Crew	
Release Isolation	Crew member covered fuel oil filter, directing spray into the bilge. Electrical load was shifted to #2 generator	
Fire Suppression		None required - no fire
Impact on Propulsion		None
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	None mentioned. However, event description notes that the failed filter had been replaced 24 hours before the incident and no flange shielding was installed on any of the filters	

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EVENT: 94234002

DESCRIPTION	ACTIONS	CAUSES
1540R- Machinery watchstander reports major lube oil leak in engineroom on NR 2 main diesel engine lube oil temperature regulating (AMOT) valve, set general quarters. Energized fire pumps 1, 2 and 3, AFFF system MOV S, and concentrate pump. Secured both MDE S. Approx. 50 gal oil spilled to bilges and onto deck plates. Machinery watchstander hit by oil spray receiving first degree burn on right forearm and inside of elbow. 1545R- Machinery watchstander evacuated to sick bay for treatment. 1545R- Commenced washing oil to bilges with AFFF hose reel. 1555R- Leak plugged with wooden DC plug. 1608R- Commenced pumping engineroom bilges to dirty oil tank. 1615R- Secured from GQ. 1700R- Secured pumping engineroom bilges to dirty oil tank. Continued clean ups and began repair efforts.	Removed AMOT valve. Disassembled, installed new roll pin, inspected condition of other roll pins in AMOT. Reinstalled AMOT. Operational tests at ****	While shifting MDE L/O AMOT valve from auto to manual position, manual valve linkage assembly failed. Valve stem was pushed out of valve by L/O pressure causing leak. Securing MDE slowed leak but residual oil in lines continued to leak from valve until hole could be plugged. Upon disassembly found roll pin between valve and manual lever missing. Suspect that roll pin either broke or worked loose.*

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MISREP30					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					<i>Human casualty(ies); vessel loses propulsion and/or steering</i>
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 94234002 (MISREP30)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil/engine room	
Cause	The temperature regulating valve (AMOT valve) for the main diesel engine lube oil failed because of manual valve linkage assembly failure. The valve stem was pushed out of the valve by the lube oil pressure. After disassembly, inspection revealed roll pin between valve and manual level missing	
Ignition Source		No ignition occurred
Detection	A crew member was present when release occurred	
Release Isolation	The crew secured both main diesel engines. However, the valve continued to leak until the hole was plugged with a wooden plug	
Fire Suppression		None required (although fire pumps and AFFF system were energized)
Impact on Propulsion		Probable loss of propulsion when both main diesel engines secured
Impact on Steering		None
Human Casualty	A crew member was hit by oil spray, receiving first-degree burns on forearm and elbow	
Corrective Action to Prevent Recurrence	Upon disassembly of the valve, it was found that the roll pin between the valve and the manual lever was missing. It is suspected that the roll pin either broke or worked loose. A new roll pin was installed and all other roll pins in AMOT valves were inspected	

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EVENT: 94234004

DESCRIPTION	ACTIONS	CAUSES
Unit was underway with #1 main diesel engine in M/P loop pilot house control with approx. 80 shaft turns. U/W oiler was making a round in the engine room when he noticed a small fuel oil leak coming from the return line on #1 MDE. He immediately notified the OOD. The vessel was brought to full stop, #2 was started and placed on line. #1 MDE was secured. The source of the leak was located. Approx. 3-4 drops of f/o per second dripped into the bilges.	Support Center Boston repaired pipe. Rubber mounting bracket was installed to prevent chaffing. *****	Return line (f/o) and a c/o line rubbed together due to vibration and ship motion. A small pin hole developed. These lines are located in original installed positions. Leading one to believe they are as designed. *****

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event: MISREP31

Event Number: 94234004 (MISREP31)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	A small pin hole developed in the fuel oil line because of rubbing with another line. The rubbing was caused by vibration and ship motion. This may have been a design flaw because the lines are located in their original installed positions	
Ignition Source		No ignition occurred
Detection	Crew member during a round	
Release Isolation	#1 main diesel engine secured	
Fire Suppression		None required - no fire
Impact on Propulsion	Partial loss of propulsion (#2 main diesel engine was started)	
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	A rubber mounting bracket was installed to prevent chaffing	

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EVENT: 94289014

DESCRIPTION	ACTIONS	CAUSES
During routine round EOW observed F/O leak on NR 1 cylinder fuel injectionline on NR 2 MDE. Leak was in a highly atomized form. The main space firedoctrine was activated and the engine secured. Begab clean up of fuel residueand ventilated space w/supply exhaust fans. Posn of orig was 27-01N 082-38W.Fuel was determined to be cracked just above the flare. Orig moored at PTCountless Moorings, Nokomis, FL for repairs.	All fuel lines have been reexamined. Other fuel lines will be replaced atfirst opportunity. Recommend all WPB's examine fuel lines for cracking andreplace yearly.****	All fuel lines were examined last month w/ no noticeable problems. Believecasualty was caused by normal vibration.*****

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP32</div>					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 94289014 (MISREP32)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	<p>The #1 cylinder fuel injection line cracked just above the flare on the #2 main diesel engine. It is believed the crack was caused by normal vibration. However, all fuel lines were examined 1 month before the incident without noticeable problems</p> <p>The release of fuel oil was highly atomized</p>	
Ignition Source		No ignition occurred
Detection	Crew member during a round	
Release Isolation	The crew secured the #2 main diesel engine	
Fire Suppression		None required - no fire
Impact on Propulsion		Partial loss of propulsion
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	<p>The fuel line was replaced, and all other fuel lines were re-inspected. Some fuel lines will be replaced at first opportunity. It was recommended that all fuel lines be regularly inspected and replaced yearly</p>	

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EVENT: 94336002

DESCRIPTION	ACTIONS	CAUSES
CG 41401 UNDERWAY FOR ELT ON 6 SEPT 94 WHEN STA. PORT O'CONNOR RECEIVED A CALLFROM GROUP CORPUS CHRISTI DIVERTED THE 41401 TO ASSIST STA.PORT ARANSAS IN ABOARDING. THE 41401 RETURNED TO BASE TO PICK UP SA PARKER. 41401 THENPROCEDED TO MEET CG 41427 AT THE SOUTH END OF PORT O'CONNOR'S AOR. WHILEENTROUTE 41401'S ENGINEER MAKE A ROUND OF THE ENGINEERING SPACES AND NOTICEDFLAMES COMING OUT AROUND THE LAGGING ON THE STEBD ENGINE TURBO. MK3 CHAPMANTOLDE THE COXN(BM3 GONZALEZ) TO SECURE THE STBD ENG DUE TO FIRE. THE COXNSECURED THE STBD ENGINE AND THEN NOTIFIED THE STATION OF THE SITUATION. THEENGINEER NOTIFIED THE CREW, AT WHICH TIME THE BOARDING OFFICER (BM3ARRANDONDO) HAD SN PETROS STAND-BY WITH A PKP FIRE EXTINGUISHER, THE ENGINEERSTARTED TO MOVE THE LAGGING WHEN THE LAGGING FELL INTO THE BILGES STILLSMOLDERING. THE BOARDING OFFICER ORDERED SN PETROS TO GIVE STILL SMOLDERING.THE BOARDING OFFICER ORDERED SN PETROS TO GIVE LAGGING TWO SHORT BURST SINCE THERE WAS A PRESENCE OF OIL IN THE BILGES. THE STBD ENG. HATCH WAS OPENEDBEFORE THE PKP WAS USED.	PKP FIRE EXTINGUISHER USED AND LAGGING REMOVED FROM SOURCE OF THE HEAT.*****	LAGGING THAT HAD A LIGHT COAT OF OIL AND DIRT.*****

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP33</div>					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					<i>Fire limited to one compartment</i>
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 94336002 (MISREP33)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil (turbocharger)/engine room	
Cause		The fire was probably caused by an oil leak from the turbocharger (the lagging had a light coat of oil and dirt), but the cause of the leak is not stated
Ignition Source		Hot surface
Detection	Crew member during a round	
Release Isolation	Crew secured the starboard engine	
Fire Suppression	PKP fire extinguisher	
Impact on Propulsion		Partial loss of propulsion
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	None mentioned	

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EVENT: 95136018

DESCRIPTION	ACTIONS	CAUSES
LAUREL U/W FM HOMEPORT ENR ST. MARY'S RIVER, GA FOR SKED ATON WORK W/BOTHMDE'S O/L TURNING FOR 200 SRPM'S. IN APPROX POS 20-29.2N 081-19.6W EOW SMELLED FUEL OIL AND FOUND FUEL LEAKING FROM #2 MDE GO-NO-GO FUEL FILTER BETWEEN HOUSING AND FLANGE SHIELDING. FLANGE SHIELDING IS WRAPPED AROUND FILTER HOUSING AND COVER TO PREVENT FUEL FROM SPRAYING ONTO HOT ENGINE AND PERSONNEL. EOW SECURED #2 MDE AND FUEL SUPPLY VALVE, BROKE OUT FIRE FIGHTING EQUIPMENT AND NOTIFIED BRIDGE OF MAJOR FUEL OIL LEAK. GENERAL QUARTERS SET. FUEL LEAK (APPROX 15 GALS) DID NOT IGNITE AND WAS WIPED UP W/RAGS. FUEL THAT MADE ITS WAY INTO BILGES WAS PUMPED THROUGH OWS.	REPLACED ALL 4 FILTER COVER GASKETS W/HAND CUT GASKETS MADE FROM .125 INCH THICK OIL PAPER AS INTERIM REPAIR. ALL 4 WERE FOUND SIMILARLY DETERIORATED. THESE GASKETS WERE INSTALLED APPROX 3 MONTHS AGO AND SHOULD NOT HAVE SHOWN ANY DETERIORATION. NSN 5330-00-121-2653 DATED 01.92 APPEARS TO MATCH ORIG EQUIP MANUFACTURER'S PART AND WILL BE INSTALLED AS PERMANENT REPAIR. INCORRECTLY MFG GASKETS DISCARDED. UNIT PMS PROCEDURES CHANGED TO INCLUDE VISUAL INSPECTION BY MAIN PROP CHIEF PRIOR TO INSTALLATION.	IMPROPER MANUFACTURE OF GO-NO-GO FUEL FILTER COVER GASKET. FILTER ASSY APL: 48900050A1. UPON REMOVAL OF COVER FOUND GASKET SEVERELY DETERIORATED. GASKET APPEARS TO BE MADE FROM RUBBER MATERIAL THAT IS NOT FUEL RESISTANT. GASKET CONTRACT DLA 500-89-W-B046 DTD 5.89) IS SOFT AND PLIABLE AND CRUSHES UPON INSTALLATION. THIS GASKET DOES NOT MEET SPEC DIMENSIONS LISTED IN FED LOG AND DOES NOT APPEAR TO MEET MATERIAL SPECS. GASKET W/SAME NSN DTD 01/92 MATCHES ORIG EQUIP MANUFACTURER'S PART AND IS SEMI-HARD AND KEEPS ITS FORM WHEN INSTAL.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP34</div>	<div></div>	<div></div>	<div></div>	<div></div>	No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 95136018 (MISREP34)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	Approximately 15 gallons of fuel oil leaked from a filter. An improperly manufactured gasket was used for this application, and all the go-no-go fuel filter cover gaskets severely deteriorated as a result of the material used, which was not fuel resistant	
Ignition Source	No ignition (shielding was wrapped around the filter housing and cover to prevent fuel from spraying onto hot engine and personnel)	
Detection	Crew member (smelled fuel oil)	
Release Isolation	#2 main diesel engine and fuel supply valve secured	
Fire Suppression		None required (however, firefighting equipment was readied)
Impact on Propulsion		Partial loss of propulsion
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	The crew replaced all four filter cover gaskets with gaskets made from oil paper as interim repair (all gaskets found to be similarly deteriorated). Gaskets that match the original manufacturer's part will be installed as permanent repair, and the procedures will be changed to include visual inspection of gaskets prior to installation	

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EVENT: 95141013

DESCRIPTION	ACTIONS	CAUSES
VSL Underway enroute Kodiak, AK fm San Diego, CA, returning from TailoredShip's Training Availability (TSTA). At 0038 hrs, FN on watch walked around the INBD side of the No. 2 MDE as part of his normal round. He saw and smelled a cloud of atomized fuel oil spraying from the high pressure fuel line run between the fuel pump and the accumulator. The FN immediately notified the Space Supervisor and secured the affected MDE. The Space Supervisor (MK3) contacted the EOW in Main Control who sounded General Quarters. Approx 2 to 3 gallons of diesel fuel spilled on the deck plates and ran into the bilges. The FN and MK3 rigged for Class Bravo fire with the Single Agent Unit (SAU) and 1 1/2 in Fire Hose with AFFF. Engineering personnel removed spilled fuel with rags. Repair party personnel responded correctly with the exception of repair party investigators who left the repair locker without OBA canisters. GQ was secured shortly after with no further incident.	The fuel line was replaced with correctly manufactured line. All other MDE and spare parts fuel lines were inspected. No other faulty lines were found. An additional fuel line bracket was added to reduce vibration. ****	Inspection of failed fuel line showed no exterior weld around end fitting. Lines on other MDEs and replacement lines from spare parts had both interior and exterior welds on all fitting ends. Excessive vibration could have also contributed to failure. ***

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP35</div>	<div></div>	<div></div>	<div></div>	<div></div>	No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 95141013 (MISREP35)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	A fuel line failed between the pump and accumulator, resulting in a spray of highly atomized fuel oil. Approximately 2 to 3 gallons of fuel oil was spilled on the deck. Inspection of the failed line showed no exterior weld on the line even though all other fuel lines have both interior and exterior welds on all fitting ends. Excessive vibration may have also contributed to failure	
Ignition Source		No ignition occurred
Detection	Crew member during a round (saw and smelled fuel oil spray)	
Release Isolation	#2 main diesel engine secured	
Fire Suppression		None required (however, firefighting equipment was readied)
Impact on Propulsion		Partial loss of propulsion
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	The failed fuel line was replaced, and a fuel line bracket added to reduce vibration. All other fuel lines (both operating and spare lines) were inspected	

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EVENT: 95141027

DESCRIPTION	ACTIONS	CAUSES
<p>MK1 and FN were conducting DEMPS tests on the #1 Ship's Service Diesel Generator (SSDG). While checking the exhaust back pressure reading, the MK1 discovered that the pressure gauge read zero, indicating a probable blockage in the gauge line. The MK1 removed the pressure gauge cut-out valve and inserted a thin wire in the line to free the blockage. The FN aided the MK1 by holding an oil can under the opening to catch any oil that might spill out. Upon removal of the wire, a Hot mixture of soot and oil sprayed out onto both the MK1 and FN. This intermittent spray lasted approx 5 seconds. Both the MK1 and FN received 2nd degree burns from the HOT spray on their arms and hands. Both were wearing long sleeve shirts or fire retardant coveralls, with sleeves rolled down, but because they were working with their hands over their heads, the Hot oil spray shot down their shirt cuffs and soaked their sleeves. Both were wearing goggles throughout the tests which prevented any eye injuries.</p>	<p>All watch standers were lectured on proper safety procedures while conducting tests and inspections on operating machinery or systems, esp those under pressure. Reiterated the importance of personal protective clothing and safety equip as this incident clearly demonstrated. In future, draining this particular gauge line will be done with the engine secured.</p>	<p>Removing valve from operating system under pressure. Blockage in this gaugeline is not uncommon because it is located at the elbow of the exhaust trunk just below the long vertical exhaust stack riser. During the DEMPS tests, MK1 noticed that #2 SSDG also had some blockage in the EXH Back pressure gaugeline but not as significant as #1 SSDG.</p>

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
					No consequences of interest
					<i>Human casualty(ies)</i>
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event: MISREP36

Event Number: 95141027 (MISREP36)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil (ship's service diesel generator)	Engine room
Cause	Two crew members were trying to clear a blocked gauge line with a thin wire. When the line became unblocked, a hot mixture of soot and oil sprayed out onto crew	
Ignition Source		No ignition occurred
Detection	Crew present when release occurred	
Release Isolation		The release was of short duration
Fire Suppression		None required - no fire
Impact on Propulsion		None
Impact on Steering		None
Human Casualty	Two crew members received second-degree burns on arms and hands. Both were wearing long-sleeve shirts or fire-retardant coveralls (with sleeves rolled down), but because they were working with their hands up, the hot oil spray shot down the shirt cuffs and soaked the sleeves. Both were wearing goggles, which prevented eye injury	
Corrective Action to Prevent Recurrence	All crew members were lectured on the proper safety procedures for conducting tests and inspections of operating equipment. The importance of PPE was stressed. Future draining of this gauge line will be done with the engine secured	

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EVENT: 95156015

DESCRIPTION	ACTIONS	CAUSES
WHILE PERFORMING ROUTINE MAINTENANCE ON FUEL SYSTEM FOR THE GENERATOR, MK2 KRM WAS INSPECTING AN INJECTOR WHEN HE ACCIDENTLY DISCHARGED THE FUEL INTO THE PALM OF HIS LEFT HAND.	PERSONNEL TO ATTEND UNIT TRAINING ON SAFE HANDLING AND TEST PROCEDURES.	INATTENTIONOPERATION

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP37</div>					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 95156015 (MISREP37)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil (diesel generator)	Engine room
Cause	Personnel error. Crew member accidentally discharged fuel into hand while inspecting an injector	
Ignition Source		No ignition occurred
Detection	Crew present when release occurred	
Release Isolation		None
Fire Suppression		None required - no fire
Impact on Propulsion		None
Impact on Steering		None
Human Casualty		None listed in event report but minor injury was probable
Corrective Action to Prevent Recurrence	Crew members will attend training on safe handling and test procedures	

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EVENT: 95198011

DESCRIPTION	ACTIONS	CAUSES
WHILE UNDERWAY ON AOR, HEADED FOR ORLENT POINT, THE STBD ENGINE STARTED TOSLOW DOWN, WE PULLED THE THROTTLES BACK TO NEUTRAL. THE PORT ENGINE STARTEDTO OVER REV PULLED ENGINE STOPS UP, STBD ENGINE SECURED AND THE PORT ENGINESTILL KRAN. WENT DOWN INTO THE CABIN TO GET EAR MUFFS AND LOOKED INTO THEVIEWING WINDOW TO THE AIR AND NOTICED A FIRE ON THE AFT END OF THE PORTENGINE. EXTINGUSHED THE FIRE AND CHECKED FOR THE DAMAGE.	REPAIRED HOSE AND FITTING TEST BAN ENGINE.*****	MATERIAL LUBE OIL HOSE SEPERATED FROM THE FITTING OTHER END OF HOSE.*****

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP38</div>					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					<i>Vessel loses propulsion and/or steering; fire limited to one compartment</i>
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 95198011 (MISREP38)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil/engine room	
Cause	A lube oil hose separated from the fitting	The hose coming loose was probably caused by vibration
Ignition Source		Hot surface
Detection	Crew member detected engine slowdown. Subsequent inspection of engine room found fire on aft end of port engine	
Release Isolation	Both engines secured	
Fire Suppression	Type of equipment used is not stated, but the fire was extinguished	
Impact on Propulsion		Loss of propulsion (port engine)
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	No special action to prevent recurrence. The hose and fitting were repaired, and the engine was tested	

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EVENT: 95199002

DESCRIPTION	ACTIONS	CAUSES
WHILE STARTING NR 1 MAIN GAS TURBINE, WATCH STANDERS IN MAIN CONTROL HEARD ALOUD NOISE AND ABORTED THE START OF THE MGT. EOW DIRECTED WATCH STANDERS TO INVESTIGATE. INVESTIGATION REVEALED HYDRAULIC OIL SPRAYING IN THE INTERIOR OF NR 1 MGT ENCLOSURE AND REPORTED FINDINGS TO EOW. EOW SECURED HYDRAULIC START REPORTED FINDINGS TO EOW. EOW SECURED HYDRAULIC START SYSTEM AND NOTIFIED CONN THAT A MAJOR OIL LEAK EXISTED ON THE NR 1 MGT AND REQUESTED GENERAL EMERGENCY BE SET. WATCH THE NR 1 MGT AND REQUESTED GENERAL EMERGENCY BE SET. WATCH SECTION QUICKLY BROUGHT A PKP EXTINGUISHER AND AFF HOSE TO THE SCENE. THE ENTIRE WATCH SECTION OBTAINED EEBDS AND PLACED THEM IN THE SLING POSITION. THE WATCH SECTION REPORTED THAT OIL WAS RUNNING OUT THE MGT ENCLOSURE ON TO THE NR 3 FIRE PUMP BELOW. THROTTLE WATCH ENERGIZED AFF PROPORTIONER PUMP AND CONDUCTED A FOUR MINUTE DUMP OF AFF INTO THE ENGINE ROOM BILGE IAW THE CCM AND MSFD. EO, MAIN PROP CHIEF, AND MK1 ARRIVED IN THE CONTROL BOOTH BY MEANS OF THE MESS DECK SCUTTLE. EO ASSUMED EOW, MAIN PROP CHIEF AND MK1 INVESTIGATED AND FOUND DRAULIC STARTED MOTOR CASING SUSTAINED A SIX INCH CRACK THAT WAS THE SOURCE OF HYDRAULIC FLUID. THE STARTING SYSTEM	CAUSES: CLOSE INSPECTION OF HYDRAULIC STARTED MOTOR REVEALED A CRACK ALONG CASTING SEAM APPROXIMATELY 6 INCHES LONG X 1/16 INCHES WIDE. SUSPECT FAILURE DUE TO MANUFACTURING DEFECT. SPECIFICALLY TWO BLIND HOLES WERE DRILLED AND TAPPED ALONG THE SEAM, MOST LIKELY WEAKENING THE MOTOR CASING. CASING INTERNAL PRESSURE MAY WELL HAVE INCREASED BEYOND DESIGN SPECIFICATIONS DUE TO FAILURE OF INTERNAL RELIEF VALVE. ADDITIONAL CONSIDERATIONS, WAS THAT DURING INSPECTION OF PIPING SYSTEM.	DRAULIC LINES TO NR 1 MGT ITSELF WAS WIPED UP AND OIL IN THE ENCLOSURE AND ON THE MGT WERE SECURED AND TAGGED OUT. THE OIL IN THE ENCLOSURE AND ON THE MGT ITSELF WAS WIPED UP AND HOT WATER FLUSHED INTO THE BILGE. DURING FLUSHING THEN NR 3 HOT WATER FLUSHED INTO THE BILGE. DURING FLUSHING THE NR 3 FIRE PUMP WAS TAGGED OUT AND COVERED TO PREVENT OIL AND WATER INTRUSION. HAVING REMOVED THE HAZARD, THE SHIP STOOD DOWN FROM GENERAL EMERGENCY.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MISREP39					No consequences of Interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 95199002 (MISREP39)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Hydraulic oil (main gas turbine)/engine room	
Cause	Crack along seam of hydraulic starting motor to #1 main gas turbine, possibly because of a manufacturing defect. Specifically, two holes had been drilled and tapped along seam, most likely weakening the motor casing. Also, the internal pressure may have increased beyond design specification because of failure of the internal relief valve	
Ignition Source		No ignition occurred (however, AFFF was applied)
Detection	Crew member heard loud noise	
Release Isolation	Crew secured the hydraulic start system	
Fire Suppression	PKP extinguisher brought to scene and AFFF system energized. Four-minute dump of AFFF into the engine room bilge	
Impact on Propulsion		Partial loss of propulsion
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence		The cracked part was replaced

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EVENT: 95221006

DESCRIPTION	ACTIONS	CAUSES
CUTTER WAS UNDERWAY AT POSN 32 DEG 30.95 N 079 DEG 10.41 W ON COURSE OF 273T MAKING TURNS FOR 18 KTS (H-P 9), WHEN THE NO.1 MDE LO COOLER OUTLET FLEX JOINT DEVELOPED A LEAK. FLANGE SHIELDING PREVENTED SPRAY AND DEFLECTED LO INTO BILGE. WATCHSTANDER SECURED THE ENGINE AND REPORTED THE CASUALTY. ECC DECLUTCHED ENG, STOPPED SHAFT, BROUGHT NO.2 SHAFT TO HP-7, AND INFORMED CONNOF CASUALTY. SHIP WENT TO GENERAL EMERGENCY FOR MAJOR LO LEAK. ENG WATCH BROKE OUT FF EQUIPMENT. LO WAS WASHED DOWN AND BILGES PUMPED TO OILY WASTE TANK. QUANTITY OF LO LEAKED WAS APPROX 10 GAL.	FLEX JOINT REPLACED WITH ONBD SPARE.*****	FAILED LO FLEX JOINT. JOINT DEVELOPED LEAK, APPROX QUARTER INCH LONG SPLIT ON BOTTOM SEAM. THIS JOINT WAS RENEWED SUMM 94 WITH ONBD SPARE, FSN 4730 011188163.*****

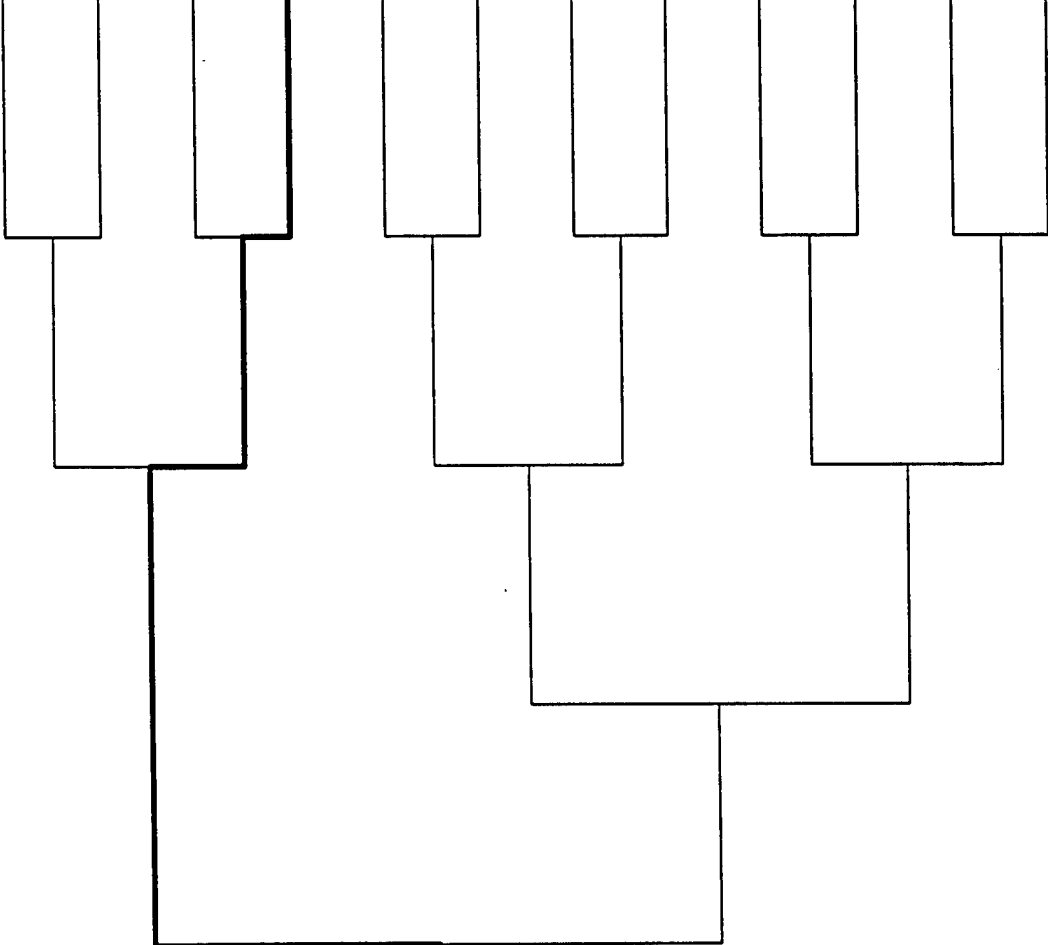
Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MISREP40					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 95221006 (MISREP40)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil/engine room	
Cause	A leak developed on the bottom seam of lube oil cooler outlet flex joint (material failure), resulting in a spill of approximately 10 gallons of lube oil	
Ignition Source		No ignition occurred. A flange shielding deflected lube oil into bilge
Detection		Crew member during a round
Release Isolation	The crew secured the #1 main diesel engine	
Fire Suppression		None required (however, firefighting equipment was readied)
Impact on Propulsion		Partial loss of propulsion
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	Flex joint replaced with spare. The cause of joint failure is not stated	

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EVENT: 95236005

DESCRIPTION	ACTIONS	CAUSES
WHILE MAKING ROUNDS AT 0119, OILER DISCOVERED A F/O LEAK IN THE #2 MDE. THE F/O SUPPLY LINE TO #8 CYLINDER HAD CRACKED AND WAS SPRAYING F/O ONTO #1 MDE'S EXHAUST MANIFOLD. THE OILER IMMEDIATELY SECURED THE #2 MDE VIA E-STOP ON THE LOCAL GAUGE BOARD. THE OILER NOTIFIED THE EOW AND THEN NOTIFIED THE BRIDGE. EOW SECURED #1 MDE. THE BRIDGE SOUNDED GENERAL QUARTERS AND SET THE MAIN SPACEFIRE DISCIPLINE. THE ECC WATCH SPRINKLED BUILDINGS WITH INSTALLED AFF SYSTEM PUTTING 1' OF FORM ABOVE THE ENGINE ROOM TANK TOPS. WHILE PREPARING THE FIRETEAM ON TUG FOC'SLE, THE #1 HOSE TENDER ENERGIZED HIS OBA CANISTER WHILE IT WAS STILL IN THE STANDBY POSITION. THE EO NOTICED THE PROBLEM AND STARTED TO ASSIST. AS HE EXAMINED THE OBA, THE SEAL BLEW SPRAYING HOT GAS/CAUSTIC SODA ONTO THE WO'S RIGHT EYE AND CHEEK. THE EMT FLUSHED THE EYE AND SKIN AND USED CITRIC ACID FROM A ORANGE AS A NEUTRALIZER, AT 0336, AFTER THE ENGINE ROOM WAS SECURED AND #1 MDE PLACED ON LINE, THE SHIP DEVERTED TO ERIE, PA. UPON ARRIVAL AT ERIE THE EO'S EYE WAS EXAMINED BY A HOSPITAL EMERGENCY ROOM DOCTOR. AFTER A COMPLETE HOSPITAL EXAM, THE EO WAS TRANSPORTED TO A LOCAL OPHTHOMOLOGIST FOR A DETAILED EXAM. NO DEBRIS OR PERMANENT DAMAGE TO THE EYE WAS EVIDENT.	DO NOT DEVIATE FROM PRACTICED PROCEDURE. OBA CANISTER WILL ONLY BE PLACED IN STANDBY POSITION AFTER GEAR CHECK PHASE OF DRESS OUT. ON SCENE LEADER WILL ASSIST AND ENSURE COMPLIANCE. COMMUNICATIONS BETWEEN FIRETEAM MEMBERS AND FIRETEAM LEADERS MOST IMPORTANT; ENTIRE TEAM MUST BE AWARE OF THEMSELVES, EACH OTHER, AND THE STATUS OF THEIR EQUIPMENT (PPE). DO NOT OVERACT, REMAIN CALM AND PROCEED AS DRILLED.	PERSONNEL ERROR - THE HOSE TENDER WAS EXPERIENCING GREAT ANXIETY WITH OUT OUTWARDLY SHOWING IT; THE HOSE WAS DISORIENTED. HOSE TENDER FAILED TO SEAT OBA CANISTER BEFORE ACTIVATING. ONCE ACTIVATED INTERNAL PRESSURE CAUSED FOIL SEAL TO RUPTURE. STRESS AND FATIGUE OF THE HOSE TENDER WERE CONTRIBUTING FACTORS.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence	
	No consequences of interest				No consequences of interest	
	Human casualty(ies)					Human casualty(ies)
	Vessel loses propulsion and/or steering					Vessel loses propulsion and/or steering
	<i>Human casualty(ies); vessel loses propulsion and/or steering</i>					<i>Human casualty(ies); vessel loses propulsion and/or steering</i>
	Fire limited to one compartment					Fire limited to one compartment
	Human casualty(ies); fire limited to one compartment					Human casualty(ies); fire limited to one compartment
	Vessel loses propulsion and/or steering; fire limited to one compartment					Vessel loses propulsion and/or steering; fire limited to one compartment
	Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
	Fire in multiple compartments					Fire in multiple compartments
	Human casualty(ies); fire in multiple compartments					Human casualty(ies); fire in multiple compartments
Vessel loses propulsion and/or steering; fire in multiple compartments					Vessel loses propulsion and/or steering; fire in multiple compartments	
Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments	

Event: MISREP41

Event Number: 95236005 (MISREP41)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	Material failure. Fuel oil supply line to #2 main diesel engine cracked, spraying fuel oil onto #1 main diesel engine's exhaust manifold	
Ignition Source		No ignition occurred, although fuel oil was spraying onto the hot exhaust manifold
Detection	Crew member during a round	
Release Isolation	The crew secured the #2 main diesel engine	
Fire Suppression		None required - no fire (however, AFFF was applied)
Impact on Propulsion		Probable loss of propulsion when both main diesel engines secured
Impact on Steering		None
Human Casualty	No casualty occurred from the fuel oil spray. However, the #1 hose tender incorrectly handled the breathing apparatus (OBA), resulting in a spray of hot gas/caustic soda in the eye and cheek of another crew member. This injury required examination by an ophthalmologist, but no permanent damage to the eye was evident	
Corrective Action to Prevent Recurrence	No corrective action was mentioned regarding the fuel oil supply line	It appears that crew was re-indoctrinated regarding the use of safety equipment and communication during emergencies

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EVENT: 95257001

DESCRIPTION	ACTIONS	CAUSES
MLB CG44342 WITH 5 PEOPLE ON BOARD RETURNING FROM FALSE ALARM PIW IN SURF OFFTOBAY BEACH. BOAT ENGINEER NOTED LAGGING FIRE TO THE REAR OF PORT ENGINE. ENGINE WAS SECURED, AND FIRE FOUGHT USING ONBOARD HAND HELD EXTINGUISHING AGENTS- DRY CHEMICAL, CO2, AND WATER NOT INSTALLED SYSTEM. 2145HRS FIRE OUT AND REFLASH WATCH SET. AT STATION UNIT EMT TREATED TWO FIRE FIGHTERS FOR SMOKE/CHEMICAL INHALATION FROM EXPOSURE TO BURNING DIESEL FUEL, LAGGING, AND EXTINGUISHING AGENTS. THREE OTHERS TRANSPORTED TO LOCAL ER FOR EVAL. ALL FOUND FFFD BY ER DOCTORS.	ENGINE DEPARTMENT REPLACED MUFFLER AND DAMAGED LAGGING. ALL ENGINEERS INVOLVED IN REPLACEMENT HAVE KNOWLEDGE OF AREA FAILURE FOR FUTURE REFERENCE. WILL CONDUCT PERIODIC VISUAL INSPECTIONS. ****	MANUFACTURE/DESIGN. FAILURE OF MUFFLER WHERE IT IS WELDED TO NECK OF LOWER INTAKE FLANGE PIPE. HAIRLINE CRACKS ONLY DETECTABLE WHEN SYSTEM OPERATING AT HIGH TEMPS/HEAVY LOADS CAUSING DAMAGED AREA TO EXPAND AND PASS BLOW-BY OIL INTO LAGGING COVERING CONNECTION FLANGE. LAGGING WILL BECOME SATURATED AND COMBUST DUE TO HIGH HEAT FROM EXHAUST FLANGE. NOT NORMALLY INSPECTED DUE TO LOCATION AND COVERED BY LAGGING. NOT A MLB PMS INSPECTION AREA. *

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP42</div>					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 95257001 (MISREP42)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	Failure of muffler at weld to neck of lower intake flange pipe. Hairline cracks (detectable only at high temperature/heavy load) allowed blowby oil into the lagging covering the connection flange. The lagging saturated and caught on fire. The cause of failure is listed as manufacturing/design deficiency	
Ignition Source	High temperature from exhaust flange	
Detection	Crew member	
Release Isolation	Crew secured the port engine	
Fire Suppression	Portable dry chemical, CO ₂ , and water extinguishers	
Impact on Propulsion		Partial loss of propulsion
Impact on Steering		None
Human Casualty	At the station, two crew members were treated for smoke/chemical inhalation from exposure to burning diesel fuel, lagging, and extinguishing agents. Three other crew members were transported to a local emergency room for evaluation. All three were found fit for duty	
Corrective Action to Prevent Recurrence	The engine department replaced the muffler and lagging. Periodic visual inspections of failed area will be initiated	

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EVENT: 95275008

DESCRIPTION	ACTIONS	CAUSES
DURING PATROL THE ENGINE ROOM HIGH TEMP ALARM WENT OFF. THE BOAT ENGINEER AND BOAT COXN CHECKED AND NOTICED A SMALL FIRE AT THE BACK OF THE PORT ENGINE. THE ENGINES WERE SECURED AND A PKP EXTINGUISHER PUT OUT THE FIRE. AFTER 15 MINUTES THE STBD ENGINE WAS STARTED AND THE RETURN TO SARDET DAUPHIN ISLAND WAS ON ONE ENGINE.	THE R/G L/O PUMP GASKET, TURBOCHARGER BLANKET, AND ALTERNATOR WERE REPLACED BY UNIT PERSONNEL.	THE FIRE WAS CAUSED BY A L/O LEAK AROUND THE R/G L/O PUMP. THE R/G L/O LEAKED ONTO THE PROP SHAFT AND WAS SPRAYED ON THE BOTTOM OF THE TURBOCHARGER BY THE PROP SHAFT SPINNING. THE LEAK WAS CAUSED BY THE FAILURE OF THE R/G L/O PUMP GASKET.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP43</div>					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					<i>Vessel loses propulsion and/or steering; fire limited to one compartment</i>
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 95275008 (MISREP43)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil (port engine)/engine room	
Cause	Failure of the R/G lube oil pump gasket. Lube oil leaked onto the propeller shaft and was sprayed on the bottom of the turbocharger by the spinning propeller shaft	
Ignition Source		Hot surface of turbo
Detection	Engine room high temperature alarm	
Release Isolation	Crew secured both engines	
Fire Suppression	PKP extinguisher	
Impact on Propulsion		Loss of propulsion when both engines were secured
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	R/G lube oil pump gasket, turbocharger blanket, and alternator were replaced	

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EVENT: 95278003

DESCRIPTION	ACTIONS	CAUSES
FN WALKER AND FA BUETTEL CUT A PIECE OF PLEXIGLASS TUBE TO REPLACE THE CUREENT SIGHT GLASS. THEY CUT THE PIECE FROM PLEXIGLASS TUBING THAT WAS HELD AS STOCK ONBOARD BY THE EO FOR THAT PURPOSE, THERE WAS NO SPECIFICATION IN THE TECHNICAL MANUAL OR DRAWINGS OF THE FILTER FOR THE SIGHTGLASS. THE FINAL CUT WAS UNEVEN ON THE ENDS. FA BUETTEL HAD TO LEAVE , SO FA CODDINGTON HAD ACCOMPANIED FA BUETTEL INSTALLING THE SIGHTGLASS, BUT NO SUPERVISORS REVIEWED THEIR INSTALLATION PRIOR TO TESTING AND NEITHER WERE WEARING EYE PROTECTION. WHEN THE SIGHTGLASS WAS PRESSURIZED TO 50 PSI BY THE PUMP, THE SIGHTGLASS LEAKED AND FUEL SPRAYED INTO THE SPACE. WALKER WAS TOO CLOSE TO THE SIGHTGLASS AND FUEL WAS SPRAYED INTO HIS EYES. HE WAS IMMEDIATELY TAKEN TO AN EMERGENCY EYEWASH STATION AND HIS EYES WERE FLUSHED. THEN HE WAS TAKEN TO SICKBAY AND SUPPORT CENTER SAN PEDRO CLINIC FOR FOLLW-UP CARE. NO PERMANENT EYE DAMGE OCCURRED.	FN WALKER AND FA CODDINGTON WERE COUNSELLED ABOUT WEARING THE PROPER PPE FORTHE JOB. SUPERVISORS WERE REMINDED OF THEIR RESPONSIBILITY TO FOLLOW UP ONWORK IN PROGRESS, AND CHECK WORK PRIOR TO PRESSURIZED TESTING.	REASON FOR THE FUEL SPRAY WAS BECAUSE OF LACK OF PROPER SUPERVISION AND LACKOF ADHERENCE TO REQUIREMENTS TO WEAR STANDARDC PERSONAL PROTECTIVE GEAR.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP44</div>	<div></div>	<div></div>	<div></div>	<div></div>	No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 95278003 (MISREP44)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil	Engine room
Cause	Maintenance cut a piece of flexiglass tube for a sight glass replacement. The final cut was uneven on the ends. When the sight glass was pressurized, it leaked and sprayed into the space. Contributing factors were (1) lack of specification in technical manuals and drawings, (2) inadequate supervision, and (3) failure to wear PPE	
Ignition Source		No ignition occurred
Detection	Crew present when release occurred	
Release Isolation		Pump secured
Fire Suppression		None required - no fire
Impact on Propulsion		None
Impact on Steering		None
Human Casualty	Crew member sprayed in eyes with fuel oil. Crew flushed his eyes, and then he was taken to a clinic for follow-up care. No permanent eye damage occurred	
Corrective Action to Prevent Recurrence	Crew members were counseled about the use of proper PPE. The supervisors were reminded to follow up work in progress and to check work prior to pressure testing	

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EVENT: 95299003

DESCRIPTION	ACTIONS	CAUSES
WHILE CONDUCTING MAINTENANCE TO THE NUMBER TWO MAIN GAS TURBINE, OIL SOAKED THREE LAGGING BLANKETS SURROUNDING THE FREE TURBINE CASING. PRIOR TO OPERATING THE ENGINE UNDER LOAD, TWO OF THE SOAKED BLANKETS WERE REMOVED BUT THE THIRD BLANKET, A 12" X 12" PIECE OF MATTING, WAS INADVERTENTLY LEFT IN PLACE AT THE BOTTOM OF THE TURBINE, THE SOAKED MATTING BEGAN SMOKING AND FLASHED INTO FLAME. THE ENGINEERING WATCH SECTION SECURED THE ENGINE AND RESPONDED WITH PKP EXTINGUISHER, AFFF HOSE AND EEBDS. THE FIRE WAS REPORTED TO THE BRIDGE AND GENERAL EMERGENCY WAS CALLED AWAY AT 1601. SHORTLY AFTER THE ENGINE WAS SECURED, THE FIRE EXTINGUISHED ITSELF. THE FIRE WAS DECLARED UNDER CONTROL AT 1602 AND REPORTED OUT AT 1603. A REFLASH WATCH WAS SET AND THE FIRE WAS OVERHAULED WITH A RAKE PROVIDED BY REPAIR II. GENERAL EMERGENCY WAS SECURED AT 1617.	THE ENGINE WAS THOROUGHLY CHECKED FOR LUBE OIL LEAKS AND REMAINING LAGGING BLANKETS INSPECTED FOR ANY SIGNS OF OIL. ALL AFFECTED LAGGING BLANKETS WILL BE RENEWED.	PERSONNEL ERROR. DURING MAINTENANCE TO NUMBER 2 MAIN GAS TURBINE, THE FREE TURBINE ANTI SIPHON LOOP VENT LINE WAS LEFT DISCONNECTED. DURING A DOCKSIDE TEST RUN, THE LEAK WAS DISCOVERED AND CORRECTED. THE SURROUNDING LAGGING WAS INSPECTED FOR DAMAGE. TWO SECTIONS WERE REMOVED AND A REQUESTION SUBMITTED FOR REPLACEMENT. THE SMALL PIECE OF LAGGING THAT CAUGHT FIRE WAS AT THE BOTTOM OF THE ENGINE AND OVERLOOKED DURING THE INSPECT.

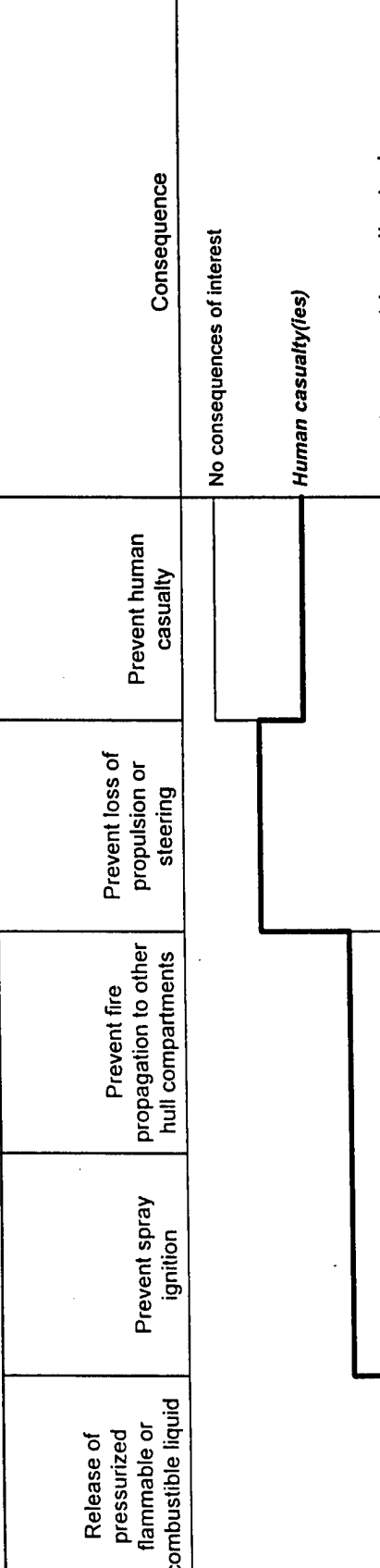
Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP45</div>					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					<i>Fire limited to one compartment</i>
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 95299003 (MISREP45)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil (main gas turbine)/engine room	
Cause	Personnel left a vent line disconnected during maintenance. During a test run, the leak was discovered and corrected. Two sections of surrounding lagging were removed, but a third oil-soaked section was overlooked and not replaced. This section later smoked and flashed into flame	
Ignition Source	Hot surface from bottom of turbine	
Detection		Crew
Release Isolation	The #2 main gas turbine was secured	
Fire Suppression	PKP extinguisher, AFFF hose, and EEBDS	
Impact on Propulsion		Partial loss of propulsion
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	The engine was checked for other lube oil leaks	

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EVENT: 96026002

DESCRIPTION	ACTIONS	CAUSES
DURING LIGHT OFF OF NO 1 MAIN DIESEL ENGINE, WHILE ADJUSTING FUEL OILPRESSURE GAGE, OILER INADVERTENTLY UNSCREWED HIGH PRESSURE FUEL OIL GAGE, ISOLATION-DAMPENING VALVE APPROX 2 GAL OF HIGH PRESSURE DIESEL FUEL WAS RELEASED VALVE HANDLE STRUCK OILER ON HAND AND FUEL SPRAYED ON HIS CHEST AND FACE OILER QUICKLY SECURED MDE SHIP IMMEDIATELY SET GENERAL QUARTERS PERMAIN SPACE FIRE DOCTRINE CLEANED UP ALL SPILLED FUEL OIL THEN SECURED FROM GENERAL QUARTER OILER WAS TREATED FOR FUEL IN EYES AND CONTUSION TO HAND BY SHIP S CORPSMAN	INCLUDE OPERATION OF FUEL OIL ISOLATION-DAMPENING VALVE IN OILER PQS LABEL ISOLATION-DAMPENING VALVES "DO NOT OPEN MORE THAN 1/4 TURN" PIN AND CHAIN EACH ISOLATION-DAMPENING VALVE TO LIMIT TRAVEL	PERSONNEL ERROR KNOWLEDGE

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event: MISREP46

Event Number: 96026002 (MISREP46)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	While adjusting fuel oil pressure gauge during engine startup, a crew member inadvertently unscrewed a high pressure fuel oil gauge isolation-dampening valve. Approximately 2 gallons of high pressure fuel oil was released	
Ignition Source		No ignition occurred
Detection	The crew member was present when the release occurred	
Release Isolation	The #1 main diesel engine was secured	
Fire Suppression		None required (although fire doctrine was set)
Impact on Propulsion		Partial loss of propulsion
Impact on Steering		None
Human Casualty	The crew member was struck by the valve handle and sprayed with fuel oil in the face, eyes, and the chest	
Corrective Action to Prevent Recurrence	Training will include operation for fuel oil isolation-dampening valve. Also, a label will be provided for the isolation-dampening valves: "Do not open more than 1/4 turn." Additionally, a pin and chain will be provided for each valve to limit travel	

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EVENT: 1141196003

DESCRIPTION	ACTIONS	CAUSES
WHILE STAGING FOR MAIN SPACE DRILL, TWO ENGINE ROOM WATCHSTANDERS NOTICED FLAME COMING FROM INBOARD NUMBER 2 MDE FWD EXHAUST MANIFOLD. MK3 AND FNDC USED APPROX 7 LBS PKP TO EXTRINGUISH FLAME. MAIN CONTROL NOTIFIED WHILE FLAME BEING PUT OUT. BRIDGE NOTIFIED BY MAIN CONTROL AND PIPED STAND DOWN FROM DRIL. AFT HOSE BROKEN OUT AND ON SCENT AND FIRE PUMP ENERGIZED. AFTER FIRE WAS OUT A REFLASH WATCH WAS SET WITH CO2 EXTINGUISHER.	REITERATE IMPORTANCE OF VIGILANT WATCHSTANDING. DUE TO MAIN SPACE DRILL STAGING, MANY PEOPLE WERE IN THE ENGINEROOM WHICH ALLOWED FOR TIMELY DISCOVERY AND RESPONSE.	OIL LEAK ON NUMBER 2 MDE EXHAUST MANIFOLD.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MISREP47					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					<i>Fire limited to one compartment</i>
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 1141196003 (MISREP47)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	This event involved an oil leak on the #2 main diesel engine exhaust manifold, but nothing is mentioned about the cause of the leak	
Ignition Source		Hot surface
Detection	Crew saw flames	
Release Isolation		The #2 main diesel engine secured
Fire Suppression	PKP extinguisher	
Impact on Propulsion		Partial loss of propulsion
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	No action mentioned regarding the oil leak	

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EVENT: 1141196011

DESCRIPTION	ACTIONS	CAUSES
SNM WAS INSTALLING FLANGE SHIELDING ON PORT RED GEAR LUBE OIL COOLER INLET VALVE. TO MAKE THE JOB EASIER, SNM ATTEMPTED TO REMOVE VALVE HANDLE. AFTER REMOVING 2 SCREWS BELIEVED TO HOLD ON THE THE VALVE STEM, HE SHOOK HANDLE TO PULL IT OFF VALVE STEM. HE HAD ACTUALLY REMOVED THE VALVE STEM SECURING PLATE. WHEN HANDLE SHOOK, HANDLE AND STEM SHOT OUT OF VALVE. SOLID STREAM OF OIL SPRAYED OUT OF THE 3/4 INCH DIA. VALVE STEM HOLE COVERING THE SNM WITH OIL AND SPRAYING OIL INTO THE MACHINERY SPACE. SECOND FN SPOTTED CASUALITY AND REPORTED TO CONTROL. EOW ASKED FOR A REPEAT IN BISBELIEF. AFETR CONFIRMING THE REPORT OOD WAS CONTACTED.	DEPARTMENTAL TRAINING	SNM LACKED KNOWLEDGE OF VALVE STEM ASSEMBLY AND FAILED TO ASK FOR ADVICE ON THE DISASSEMBLY. SUPERVISION WAS ALSO UNAWARE OF SNM ACTIONS.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP48</div>					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 1141196011 (MISREP48)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil	Location unclear
Cause	A crew member was attempting to remove the handle of a valve in the lube oil cooler to facilitate the installation of a flange shielding. However, the crew member inadvertently removed two screws that secured the valve stem holding plate. The stem shot out of the valve, covering crew member with oil and spraying oil in the machinery space. The crew member lacked knowledge of the valve stem assembly and did not ask for advice. The supervisor was also unaware of the activity	
Ignition Source		No ignition occurred
Detection	Crew member was present when the release occurred	
Release Isolation	Not stated	
Fire Suppression		None required - no fire
Impact on Propulsion		None
Impact on Steering		None
Human Casualty	Crew member sprayed with lube oil. No details were provided about the severity of the injury, if any	
Corrective Action to Prevent Recurrence	Departmental training	

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EVENT: 1151296001

DESCRIPTION	ACTIONS	CAUSES
ON 18APR96 CGC LEGARE AND NESU PORTSMOUTH PERSONNEL WERE CONDUCTING AN OPERATIONAL TEST OF THE NEWLY REBUILT #2 SSDG. WHILE ACTING AS ONE OF MANY OBSERVERS, MK3 ROUSE WAS EXPOSED TO A LARGE AMOUNT OF 9250 LUBE OIL. THIS LUBE OIL LEAKED UNDER PRESSURE WHEN A L/O FILTER HOUSING FRACTURED. THE OIL SPRAY GOT IN HIS EYES AND ON HIS HAIR AND CLOTHING. MK3 ROUSE WAS IMMEDIATELY ESCORTED TO THE ENGINE ROOM EYE WASH STATION AND THE HS1 WAS CALLED TO THE ENGINE ROOM TO RENDER ASSISTANCE.	THE SHOP PERSONNEL ARE GOING TO CAREFULLY LABEL ALL OF THE F/O PUMPS WITH THE PROPER ENGINE APPLICATION. AS WELL, THE PUMPS WITH NO INTERNAL RELIEF VALVE ARE BEING PHASED OUT.	THE CAUSE OF THIS MISHAP WAS THE INSTALLATION OF AN IMPROPER L/O PUMP ON THE #2SSDG. THE PUMP INSTALLED HAD NO INTERNAL RELIEF VALVE WHICH CREATED A HIGH PRESSURE WITH NO RELIEF SITUATION. THE FILTER HOUSING IS NOT DESIGNED TO WITHSTAND THE HIGH PRESSURE, SO IT FAILED. THE CORRECT PUMP LOOKS VERY SIMILAR TO THE INCORRECT PUMP, AND BOTH CAN BE INSTALLED ON THE ENGINE.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event: MISREP49

Event Number: 1151296001 (MISREP49)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil/engine room	
Cause	A lube oil filter housing fractured because an improper lube oil pump had been installed on the #2 ship service diesel generator. (The installed pump had no internal relief valve.) The incorrect pump looks very similar to the correct pump, and it fits on the engine	
Ignition Source		No ignition occurred
Detection	Crew was present when the release occurred	
Release Isolation		Spray probably stopped by securing #2 ship service diesel generator
Fire Suppression		None required - no fire
Impact on Propulsion		None. Crew was performing an operational test of generator
Impact on Steering		None
Human Casualty	Crew member was sprayed with lube oil in the eyes, hair, and clothing	
Corrective Action to Prevent Recurrence	Shop personnel will label all lube oil pumps to indicate the proper engine application. The pumps with no internal relief valve are being phased out	

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EVENT: 1151396003

DESCRIPTION	ACTIONS	CAUSES
LOW FUEL OIL PRESSURE ALARM SOUNDED ON THE MPCMS CONSOLE FOR 1 MDE. ENGINE ROOM WATCHSTANDER INVESTIGATED FUEL OIL COALESCER FILTERS AND FOUND VALVE OPEN AND PIPE CAP OFF THE DRAIN LINE OF THE ON-LINE FILTERS. EOW PROCEEDED IAW THE MAIN SPACE FIRE DOCTRINE, AND THE SHIP WENT TO GENERAL QUARTERS. THE ESTIMATED TWO GALLONS OF FUEL OIL WAS COVERED WITH AFFF AND PUMPED TO OIL WASTE TANK.	HOLD DIVISIONAL TRAINING ON PROPER MAINTENANCE PROCEDURES AND QUALITY ASSURANCE.	INATTENTION OF PERSONNEL RENEWING THE FUEL OIL COALESCER AND LACK OF QUALITY ASSURANCE BY SUPERVISORS LED TO THE DRAIN VALVE NOT BEING CLOSED AND THE DRAIN CAP NOT PROPERLY TIGHTENED ON THE COALESCERS DURING THE LAST INPORT. □

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP50</div>					<div>No consequences of interest</div> <div>Human casualty(ies)</div> <div>Vessel loses propulsion and/or steering</div> <div>Human casualty(ies); vessel loses propulsion and/or steering</div> <div>Fire limited to one compartment</div> <div>Human casualty(ies); fire limited to one compartment</div> <div>Vessel loses propulsion and/or steering; fire limited to one compartment</div> <div>Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment</div> <div>Fire in multiple compartments</div> <div>Human casualty(ies); fire in multiple compartments</div> <div>Vessel loses propulsion and/or steering; fire in multiple compartments</div> <div>Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments</div>

Event Number: 1151396003 (MISREP50)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	A drain valve on one of the fuel oil coalescer filters was not closed, and the drain cap was not properly tightened	
Ignition Source		No ignition occurred
Detection	Low fuel oil pressure alarm for the #1 main diesel engine	
Release Isolation		The drain valve was closed
Fire Suppression		None required (although the spilled oil was covered with AFFF)
Impact on Propulsion		None
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	Divisional training will be provided on the proper maintenance procedures and quality assurance	

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EVENT: 1327996001

DESCRIPTION	ACTIONS	CAUSES
WHILE UNDERWAY WITH BOTH MAIN DIESELS OPERATING AT 1950 ENGINE RPM EXPERIENCED A SUDDEN VIBRATION AND A LOSS OF RPM ON THE PORT MAIN ENGINE FOLLOWED BY A POSSIBLE CRANKCASE EXPLOSION. APPROX. 5 GALLONS OF LUBE OIL WAS FORCED OUT OF THE OIL LEVEL INDICATING TUBE SPRAYING HOT LUBE OIL ON THE NR1 SHIP'S SERVICE GENERATOR AND THE STARBOARD MAIN DIESEL ENGINE. THERE WAS NO VISUAL OR AUDIO ALARM SIGNAL DISPLAYED ON THE BRIDGE PRIOR TO THE CASULTY. THE ENGINEER ON WATCH WAS MAKING A ROUND OF THE ENGINE ROOM AT THE TIME OF THE CASULTY AND SECURED THE PORT ENGINE IMMEDIATELY. THE MAIN SPACE FIRE DOCTRINE WAS SET AND 10 GALLONS OF AFFF FOAM WAS APPLIED TO THE ENGINE ROOM BILGE. THE OIL WAS CLEANED OFF AL MACHINERY AND THE CUTTER RETURNED TO HOMEPORT USING THE STARBOARD ENGINE.	REPLACE THE MAIN ENGINE.□	INSPECTION REVEALED THE INTAKE VALVE IN THE NUMBER 3 CYLINDER, RIGHT BANK WAS BROKEN OFF. IT APPEARS THE FAILURE OF THE VALVE STARTED A CHAIN REACTION. IT IS PRESUMED THAT WHEN THE VALVE BROKE IT WAS SUCKED INTO THE CYLINDER DESTROYING THE PISTON AND CYLINDER LINER. THE PISTON WRIST PIN AND CONNECTING ROD REMAINED INTACT CAUSING SEVERE DAMAGE TO THE ENGINE BLOCK.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP51</div>					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 1327996001 (MISREP51)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil (port engine)/engine room	
Cause	While under way, one of the engines experienced a sudden vibration, loss of rpm, followed by a possible crankcase explosion. Approximately 5 gallons of lube oil sprayed out of an oil level indicating tube. The cause was internal engine failure. (The intake valve in the #3 cylinder broke off. The broken valve was probably sucked into the cylinder, destroying the piston and piston liner)	
Ignition Source		No ignition occurred
Detection	Crew member during a round	
Release Isolation	Crew secured the port main diesel engine	
Fire Suppression		None required (although AFFF system was charged and 10 gallons AFFF foam was applied to engine room bilge)
Impact on Propulsion	Partial loss of propulsion	
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	Port main diesel engine was replaced	The root cause of engine failure was not mentioned, and no corrective action to prevent recurrence of the engine failure was proposed

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EVENT: 1342396001

DESCRIPTION	ACTIONS	CAUSES
UNIT EXPERIENCED MAJOR FUELOIL LEAK ON #1SSDG, SSDG WAS SECURED, ELECTRICAL LOAD SHIFTED TO #1 STANDBY SSDG, #1 MDE WAS SECURED VIA THE BRIGE. ENDED UP MINOR LOSS WAS INCURED.	ALL INJECTORS REPLACED, AND FUEL TANKS CLEANED IN DRY DOCK.	FUEL INJECTORS OVERDUE FOR REPLACEMENT AND BIO GROWTH IN THE TANKS.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

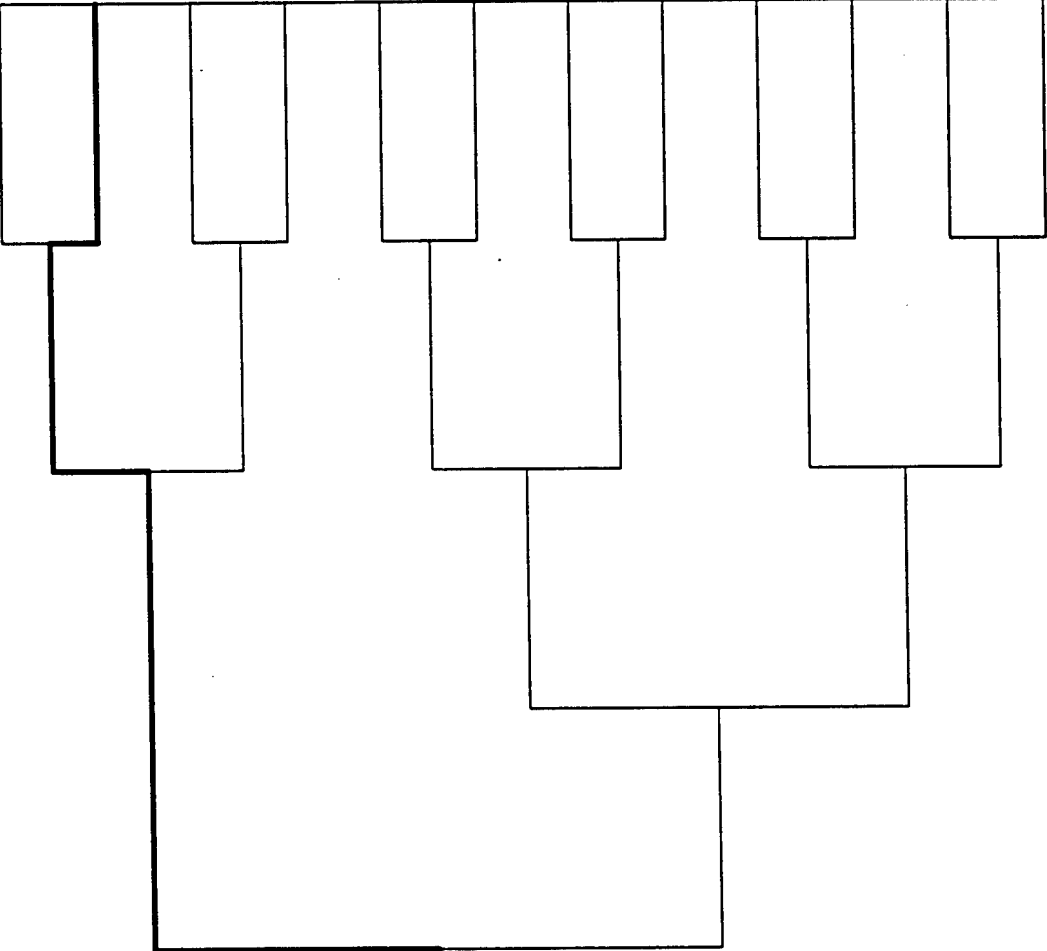
Event: MISREP52

Event Number: 1342396001 (MISREP52)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil	Engine room
Cause	The unit experienced a major fuel oil leak in the fuel injectors on the #1 ship service diesel generator. The fuel injectors were overdue for replacement. Also, there was bio growth in the fuel oil tanks	
Ignition Source		No ignition occurred
Detection		Detection method unclear
Release Isolation	The #1 ship service diesel generator was secured	
Fire Suppression		None required - no fire
Impact on Propulsion	Partial loss of propulsion when the #1 main diesel engine secured	
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	All injectors were replaced, and the fuel tanks were cleaned	

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EVENT: 1342496001

DESCRIPTION	ACTIONS	CAUSES
An MK3 was working in the engine room to replace the #1 reduction gear temperature gauge with a thermo bulb. A very thin capillary tube connects the gauge to the bulb. Before starting work the EPO discussed the steps required to do the job with the MK3. The EPO informed the MK3 that the line was pressurized. The MK3 was gathering the tools needed to do the job and moved the gauge in order to determine the nut size on the thermo bulb. The MK3 did not have eye protection on. The tube snapped and sprayed his left eye. Another crew member transported them MK3 to the hospital emergency room. The hospital released the MK3 immediately and recommended that he see an eye specialist. The MK3 saw a specialist at the local military hospital the following day. The physician noted no apparent permanent damage to his eye.	Continue providing safety training. Unit safety board to evaluate effectiveness of current training program and recommend areas for improvement. Discuss mishap with crew. Provide more supervision to new MKs on unfamiliar tasks. Require new MKs to identify safety gear to be used with unfamiliar tasks prior to starting job.	The thermo bulb tube was kinked and broke when it was moved. The MK3 was not wearing proper eye protection (safety goggles). The MK3 was not experienced in working with pressured lines. □

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence	
					No consequences of interest	
						<i>Human casualty(ies)</i>
						Vessel loses propulsion and/or steering
						Human casualty(ies); vessel loses propulsion and/or steering
						Fire limited to one compartment
						Human casualty(ies); fire limited to one compartment
						Vessel loses propulsion and/or steering; fire limited to one compartment
						Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
						Fire in multiple compartments
						Human casualty(ies); fire in multiple compartments
						Vessel loses propulsion and/or steering; fire in multiple compartments
						Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event: MISREP53

Event Number: 1342496001 (MISREP53)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil/engine room	
Cause	During replacement of a temperature gauge, a thermo bulb was kinked and broke when it was moved, spraying lube oil on a crew member. The crew member was not wearing proper eye protection and had no experience in working with pressurized lines	
Ignition Source		No ignition occurred
Detection	Crew member was present during the release	
Release Isolation		None mentioned
Fire Suppression		None required - no fire
Impact on Propulsion		None (the ship was in port)
Impact on Steering		None
Human Casualty	Lube oil sprayed in the left eye of a crew member	
Corrective Action to Prevent Recurrence	Safety training will continue to be provided, and the unit safety board will evaluate the effectiveness of the current training program to recommend areas for improvement. This mishap will be discussed with crew, more supervision will be provided to new crew members on unfamiliar tasks, and new crew members will be required to identify safety gear to be used with unfamiliar tasks prior to starting job	

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EVENT: 1344396001

DESCRIPTION	ACTIONS	CAUSES
MK3 FOUND OIL SHEEN IN BILGE, MKC, EMC AND MK3 INVESTIGATED. FOUND LEAK IN #2 MDE MARINE GEAR COOLER. ENGINE WAS SECURED. THE LUBE OIL LINES TO THE TURBO BACKED OFF, SPRAYING LUBE OIL ONTO THE EXHAUST MANIFOLD. A FIRE RESULTED AND WAS PUT OUT BY THE MKC AND MK3.	RED GEAR WILL BE REMOVED AND INSPECTED, IF FOUND SAT O-RINGS WILL BE REPLACED.	FALIURE OF O-RING IN #2 RED GEAR.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MISREP54</div>	<div></div>	<div></div>	<div></div>	<div></div>	No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					<i>Fire limited to one compartment</i>
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: 1344396001 (MISREP54)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil/engine room	
Cause	A crew member found an oil sheen in the bilge. Upon investigation, the crew found a leak in the marine gear cooler for the #2 main diesel engine. The cause of the leak was the failure of an O-ring in the #2 reduction gear, resulting in lube oil spraying onto the exhaust manifold	
Ignition Source	Hot surface (exhaust manifold)	
Detection	Crew	
Release Isolation	The #2 main diesel engine was secured	
Fire Suppression		Portable extinguishers
Impact on Propulsion		Partial loss of propulsion
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	The reduction gear will be removed and inspected, and, if needed, the O-rings will be replaced. The report description does not mention the cause of the O-ring failure	

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EVENT: 1523396001

DESCRIPTION	ACTIONS	CAUSES
ENGINE ROOM REPORTED MAJOR FUEL OIL LEAK ON #1 MDE AND RECOMMENDED SETTING GENERAL EMERGENCY IAW CASUALTY CONTROL MANUAL. GENERAL EMERGENCY STATIONS SET AT 1127 IAW MAIN SPACE FIRE DOCTRINE. MATERIAL CONDITION ZEBRA WAS SET. REPORTS FROM ENGINE ROOM INDICATED TWO GALLONS OF NUMBER 2 FUEL OIL SPRAYED FROM #1 MDE COALESCERS ACROSS LOWER LEVEL INBOARD ONTO #2 MDE HOT L/O PIPING. COALESCARS ISOLATED AND BOTH MDE'S SECURED IAW MSFD. WASHED FUEL OIL TO BILGES WITH HOT WATER AND PERFORMED BILGE CLEANUPS USING OIL ABSORBENT PADS. AFTER CLEANUP, STARTED AND PLACED #2 MDE ON LINE. A: SYSTEMS SATISFACTORY. REPAIR LOCKER AND DC CENTRAL SECURED FROM GENERAL EMERGENCY STATIONS AT 1227.	DURING PRIOR MAINTENANCE AND FILTER CHANGE OUTS ENGINEERS DISCOVERED THIS PROBLEM. NEW COALESCAR UNIT WERE ORDERED ON 16 APR 96 AND HAVE NOT BEEN RECEIVED.	#1 MDE COALERS CER TOP COVER GASKET WAS FOUND DEFORMED AND CUT. THIS OCCURED BECAUSE THE ALUMIUM CANISTER IS OUT OF ROUND AND THE BRASS TOP COVER IS NOT; THEREFORE THE PARTS DO NOT ALIGN WHEN TIGHTENED. BOTH COALESCAR CANISTERS FOR #1 MDE ARE OUT OF ROUND.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
					No consequences of interest
					Human casualty(ies)
					<i>Vessel loses propulsion and/or steering</i>
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event: MISREP55

Event Number: 1523396001 (MISREP55)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	Two gallons of fuel oil sprayed from the coalescers for the #1 main diesel engine onto the hot lube oil piping for the #2 main diesel engine. The cause of the leak was that the coalescer top cover gasket was deformed and cut. This occurred because the aluminum canister was misshaped, resulting in the aluminum canister and brass top cover not aligning when tightened. (During prior maintenance and filter change out, engineers discovered this problem, but the new coalescers had not been received)	The misshaped canister was probably the result of normal wear
Ignition Source		No ignition (however, fuel oil was sprayed on #2 main diesel engine hot lube oil piping)
Detection		Crew in the engine room
Release Isolation	The coalescers were isolated, and both main diesel engines were secured	
Fire Suppression		None required (however, main space fire doctrine was set)
Impact on Propulsion		Loss of propulsion
Impact on Steering		None
Human Casualty		None
Corrective Action to Prevent Recurrence	New coalescer units ordered	

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APPENDIX B

MSIS Events and Associated Event Trees/Event Characterization Tables

This attachment presents the analysis of selected events from the Marine Safety Information System (MSIS). These events involve accidental sprays of pressurized flammable or combustible liquids, and they were selected by the Data Administration Division of the U.S. Coast Guard (Coast Guard)¹ according to our specifications. Specifically, we requested incidents involving fuel oil, lube oil, and hydraulic oil systems on board ships of all sizes exceeding about 100 gross tonnage. We suggested using key words such as "fuel," "oil," "L/O," "F/O," "fire," and "spray" in the search for MSIS events. Also, we requested a variety of owners/operators, flag states, and classification societies, and we limited the query to accidents that occurred in U.S. waters or on ships coming to/leaving the U.S.

The MSIS query performed by the Coast Guard generated a total of 38 records between 1992 and 1996. This attachment presents the analysis of these events in the following sequence:

- The MSIS number and an event description. The event description is a compilation of selected excerpts taken directly from the MSIS database (we have not edited or modified these descriptions)
- An event tree, which shows the sequence of events associated with the event
- An event characterization table, which supplements the event tree with comments (as documented in or as inferred from the MSIS event description) about the system/location, cause, ignition source, means of detection, means of release isolation, means of fire suppression, impact on propulsion, impact on steering, human casualty, and corrective action

¹Letter (with MSIS screen printouts) to Chris Yerger of JBF Associates, Inc., from G. W. Chappell, Chief of the Data Administration Division, U.S. Coast Guard, Washington, DC, July 18, 1997.

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EVENT NUMBER: MC94024391

--- INCIDENT BRIEF ---

FUEL LINE ON STBD MAIN ENGINE RUPTURED REPORTEDLY DUE TO NORMAL WEAR. FUEL SPRAYED ON EXHAUST MANIFOLD CAUSING SMALL FIRE. FUEL SHUT DOWN AND FIRE IMMEDIATELY EXTINGUISHED. FIRE WATCH POSTED AND FUEL LINE REPLACED. SMALL FLARE-UP OCCURRED AND WAS QUICKLY EXTINGUISHED DURING WHICH TIME CHIEF ENGINEER RECEIVED MINOR BURNS TO LEFT HAND. NO LOSS OF TIME AT WORK. NO ACTIONABLE NEGLIGENCE/MISCONDUCT NOTED. ABS SURVEYOR ATTENDED VSL. SEE MCNS FOR RECOMMENDATIONS.

DESCRIPTION/

FUEL LINE RUPTURED ON STARBOARD MAIN ENGINE AND SPRAYED FUEL ON EXHAUST MANIFOLD CAUSING SMALL FIRE.

--- COMMENTS ---

SMALL FIRE ON BOARD WHEN FUEL LINE RUPTURED SPRAYING FUEL ON EXHAUST MANIFOLD. EXTINGUISHED WITH PORTABLE HAND HELD. SURVEYOR NOTED DAMAGE TO THE STARTING AIR CONTROL PIPING FILTER/DRYER UNIT. RECOMMENDED THAT THE FILTER/DRYER UNIT BE RENEWED PRIOR TO COMPLETION OF THE NEXT ANNUAL MACHINERY SURVEY.

--- DESCRIPTION ---

FUEL LINE RUPTURED AND SPRAYED FUEL ON EXHAUST MANIFOLD RESULTING IN SMALL FIRE. CHIEF ENGINEER EXTINGUISHED FIRE; HOWEVER, SMALL FLARE-UP OCCURRED RESULTING IN MR. JARMULA SUSTAINING MINOR BURNS TO LEFT HAND. NO LOSS OF WORK TIME. NON-REPORTABLE INJURY.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS01					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

revised 03/12/98 at 12:12

Event Number: MC94024391 (MSIS01)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	Fuel line on starboard engine ruptured due to normal wear. Fuel sprayed on exhaust manifold. Small fire occurred that went out when fuel was shutdown. Subsequent small flare-up caused burn to chief engineer	
Ignition Source	Hot surface (exhaust manifold)	
Detection		Crew
Release Isolation		Engine shut down, which stopped flow of fuel
Fire Suppression	Portable extinguisher	
Impact on Propulsion		Partial loss of propulsion when the starboard main engine shut down
Impact on Steering		None
Human Casualty	Minor injury - burn to left hand	
Corrective Action to Prevent Recurrence	No preventive action mentioned - the line was replaced	

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EVENT NUMBER: MC95001185

--- INCIDENT BRIEF ---

M/V POL AMERICA, en route to Baltimore, suffered eng room fire. Fuel oil line ruptured spraying f/o onto generator exhaust. Fuel flashed into flames. Crew abandoned eng room, discharged fixed CO2 system. Vsl safely anchored. Fire extinguished by CO2. COTP Order placed on vsl restricting vsl until repairs verified by class society. Repairs made by vsl crew, class society approved. Vsl departed port, continued voyage.

DESCRIPTION/

Flange in fuel line is where burst occurred. Flange gasket failed, exact cause of failure is unknown.

COMMENT/ Engine room displayed poor "house keeping" practices. Lack of proper maintenance may have been the cause of the gasket failure.

--- EFFECTIVENESS OF EQUIPMENT ---

fixed CO2 system extinguished the fire.

--- EFFECTIVENESS OF CREW ---

Crew abandoned the engine room and discharged the CO2 system.

--- DESCRIPTION ---

Fuel line ruptured at flange. Fuel sprayed onto diesel generator exhaust line and burst into flames. Heavy black smoke filled the engine room. Crew was unable to battle the flames and they abandoned the engine room. Equipment was secured and the fixed CO2 system was discharged. CO2 extinguished the flames.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS02					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					<i>Vessel loses propulsion and/or steering; fire limited to one compartment</i>
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Revised 03/12/98 at 12:12

Event Number: MC95001185 (MSIS02)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	A fuel oil line ruptured (gasket failed), spraying fuel oil onto generator exhaust. The engine room displayed poor housekeeping practices, and the report speculates that lack of proper maintenance may have been the cause of the gasket failure	
Ignition Source	Hot surface (generator exhaust)	
Detection		Crew
Release Isolation		Engine secured, engine room secured
Fire Suppression	Used fixed CO ₂ system	
Impact on Propulsion	Temporary loss of propulsion	
Impact on Steering		None
Human Casualty	None	
Corrective Action to Prevent Recurrence	No preventive action mentioned - the crew repaired the vessel and the class society approved the repairs	Causes noted above include: <ul style="list-style-type: none"> - Engine room displayed poor housekeeping practices - Lack of proper maintenance could have been the cause of the gasket failure

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EVENT NUMBER: MC95004415

--- INCIDENT BRIEF ---

MILE 258 IN ICW THE TOWING VSL MR. KEN, PUSHING ONE EMPTY DECK CARGO BARGE AHEAD, EXPERIENCED A ENGINE ROOM FIRE WHICH QUICKLY GOT OUT OF CONTROL. THE VESSEL WAS PUSHED UP IN THE MUD NEAR THE NORTH BANK. THE CREW ABAONDED THE VSL AND WAS PICKED UP BY M/V LAREDO. THE VESSEL WAS LATER SECURED AND FIRE WAS PUT OUT. THERE WERE NO INJURIES, AND MINUMUM POLLUTION. SEE ALSO MC95006703.

--- DESCRIPTION ---

MASTER ATTEMPTED TO ENTER ENGINEROOM WITH ONE CO2 EXTINGUISHER. SMOKE FORCED HIM OUT OF ENGINE ROOM. ATTEMPTS TO EXTINGUISH FIRE FM DOOR UNSUCCESSFUL. VSL ABANDONED DUE TO UNCONTROLLED FIRE.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS03					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					<i>Vessel loses propulsion and/or steering; fire limited to one compartment</i>
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Revised 03/12/98 at 12:12

Event Number: MC95004415 (MSIS03)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	Fuel leak on engine manifold	
Ignition Source	Engine manifold	
Detection	Crew	
Release Isolation		Probably unsuccessful. The engine room fire burned out of control, and the vessel was abandoned
Fire Suppression	Crew attempted to put out the fire using a 15-lb CO ₂ extinguisher, but this was insufficient and the smoke forced crew out of the engine room. The vessel was later secured and fire put out by unknown means	
Impact on Propulsion		Loss of propulsion
Impact on Steering		None
Human Casualty	None	
Corrective Action to Prevent Recurrence	No preventive action mentioned	

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EVENT NUMBER: MC95004811

--- INCIDENT BRIEF ---

FUEL LINE APPARENTLY BROKE, SPRAYING FUEL ON A HOT MANIFOLD OR GEAR BOX. FUEL IGNITED CAUSING FIRE. FIRE WAS CONTAINED AND EXTINGUISHED WITHIN 30 MIN. ONLY DAMAGE WAS CAUSED BY SMOKE. ONE INDIVIDUAL CUT HIS HAND DURING THE INCIDENT, BUT WAS BANDAGED AT A LOCAL HOSPITAL AND RETURNED TO WORK. NO DRUG OR ALCOHOL TESTS WERE ADMINISTERED. NO EVIDENCE OF NEGLIGENCE OR MISCONDUCT. CG-2692 ON FILE.

--- CASUALTY PROLOGUE ---

VESSEL WAS FLEETING BARGES WHEN A FUEL LINE BROKE CAUSING A FIRE IN THE ENGINE ROOM.

DESCRIPTION/

FUEL LINE APPARENTLY BROKE, SPRAYING FUEL ONTO A HOT MANIFOLD OR GEAR BOX. DAMAGE WAS LIMITED TO SMOKE DAMAGE. FIRE WAS EXTINGUISHED WITHIN 30 MIN.

--- DESCRIPTION ---

FUEL LINE BROKE AND SPRAYED FUEL ON HOT MANIFOLD OR GEAR BOX, RESULTING IN FIRE. FIRE WAS EXTINGUISHED WITH THE HELP OF THE M/V STEEL CLIPPER. STEEL CLIPPER USED FIXED PUMP AND HOSES WHILE CREW OF M/V FIDO WOLF ASSISTED WITH PORTABLE CO2 EXTINGUISHER. FIRE WAS EXTINGUISHED WITHIN 30 MINUTES. DAMAGE WAS MOSTLY SMOKE DAMAGE IN ENGINE ROOM.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS04					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Revised 03/12/98 at 12:12

Event Number: MC95004811 (MSIS04)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	Fuel oil apparently broke	
Ignition Source	Hot surface (manifold or gear box)	
Detection	Crew	
Release Isolation	Not stated	Not inferred
Fire Suppression	Crew used portable CO ₂ extinguisher, and an assisting towboat provided a fixed pump and hoses. The fire was extinguished in 30 minutes	
Impact on Propulsion		Loss of propulsion
Impact on Steering		None
Human Casualty	Minor injury - crewman cut his hand	
Corrective Action to Prevent Recurrence	No preventative action mentioned	

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EVENT NUMBER: MC95005432

--- INCIDENT BRIEF ---

M/V MASTER CHANNING CAUGHT FIRE AND BURNED TO THE WATERLINE NEAR THE CAMERON JETTIES, CAMERON, LA. THE MASTER SMELLED SMOKE AND UPON CHECKING THE ENGINE ROOM, SAW FIRE ON THE TURBO CHARGER UNIT. HE SPRAYED THE FIRE WITH WATER WHICH SPREAD THE FIRE. THE VSL BURNED TO THE WATERLINE AND SANK OUTSIDE THE JETTIES. THE MASTER MARKED THE SITE WITH A SMALL BUOY.

--- CASUALTY PROLOGUE ---

FIRE DESTROYED VSL. MASTER SPRAYED WATER ON BURNING TURBO UNIT, SPREADING THE FIRE.

--- EFFECTIVENESS OF EQUIPMENT ---

MASTER USED DECK WATER HOSE TO FIGHT FIRE SPOTTED ON MDE TURBO. THE WATER STREAM SPREAD THE FIRE THROUGHOUT THE ENGINE ROOM. NO PORTABLE UNITS USED.

--- DESCRIPTION ---

MASTER SMELLED BURNING OIL AND LOOKED IN ENGINE ROOM OF F/V WHILE U/W. HE SPOTTED FIRE ON THE TURBO OF THE CUMMINS MDE. HE SPRAYED WATER FROM THE DECK WATER HOSE ONTO THE FIRE WHICH IMMEDIATELY SPREAD THROUGHOUT THE ENGINE ROOM.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					<i>Vessel loses propulsion and/or steering; fire limited to one compartment</i>
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
Vessel loses propulsion and/or steering; fire in multiple compartments					
Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments					

Event: MSIS05

Event Number: MC95005432 (MSIS05)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Engine room	Lube oil
Cause		Broken line
Ignition Source		Hot surface
Detection	Crew	
Release Isolation	Not stated	Not inferred
Fire Suppression	Master used water hose, which spread the fire. The vessel burned to the water line	
Impact on Propulsion	Total loss of propulsion	
Impact on Steering		None until vessel sunk
Human Casualty	None	
Corrective Action to Prevent Recurrence	No preventative action mentioned	

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EVENT NUMBER: MC95009834

--- INCIDENT BRIEF ---

ON 21 JUNE 95 AT APPROX. 0130, A FIRE IN THE ENGINE ROOM OF THE T/S GAETANO D'ALESIO WAS DISCOVERED BY THE ENG2. THE FIRE WAS TOO BIG TO EXTINGUISH WITH A PORTABLE UNIT SO THE CHIEF OFFICER ENGAGED THE CO2 FIREFIGHTING SYSTEM. THE SOURCE APPEARED TO BE THE NUMBER ONE GENERATOR AS IT WAS ENGULFED IN FLAMES. THE SECOND GENERATOR ALSO SUSTAINED FIRE DAMAGE AS WELL AS OTHER ENGINE ROOM WIRING, ETC. FIRE SECURED. NO INJ/POLL. OVER \$25,000 DMG. SEE MCNS.

--- EFFECTIVENESS OF EQUIPMENT ---

177 CYLINDERS OF CO2 EFFECTIVELY EXTINGUISHED HIGH TEMPERATURE, ENGINE ROOM FIRE.

--- EFFECTIVENESS OF CREW ---

CREW SECURED ALL DOORS AND VENTING.

--- COMMENTS ---

ON 21 JUNE 1995 AT 0116, THE NUMBER ONE DIESEL GENERATOR ONBOARD THE M/V GAETANO D'ALESIO CAUGHT FIRE WHEN A PLUG ON THE END OF A HIGH PRESSURE FUEL LINE, WHICH LEADS TO THE FUEL INJECTOR OF THE NO. 4 CYLINDER, BROKE CAUSING A FUEL LEAK. THE FLAMES AND HEAT FROM GENERATOR NO. 1 CAUSED MINOR SURFACE OVERHEATING TO GENERATOR NO. 2 AND TO A LESSER EXTENT, GENERATOR NO. 3. SECTIONS OF ELECTRICAL WIRING LOCATED ABOVE THE GENERATORS WERE DAMAGED FROM THE EXCESSIVE HEAT. THE VESSEL WAS PARTIALLY POWERED BY EMERGENCY GENERATORS WHILE REPAIRS WERE BEING MADE TO THE GENERATORS AND WIRING.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS06					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					<i>Vessel loses propulsion and/or steering; fire limited to one compartment</i>
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Revised 03/12/98 at 12:12

Event Number: MC95009834 (MSIS06)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	A plug broke on the end of the high pressure fuel line to the number 4 cylinder of generator #1	
Ignition Source		Hot surface
Detection	Crew	
Release Isolation	Crew secured all doors and venting	
Fire Suppression	Fixed CO ₂ extinguisher system (177 cylinders)	
Impact on Propulsion		Loss of propulsion
Impact on Steering		None
Human Casualty	None	
Corrective Action to Prevent Recurrence	No preventative action mentioned	

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EVENT NUMBER: MC95010169

--- INCIDENT BRIEF ---

A tank barge suffered a fire on the starboard deepwell pump engine during cargo offload. The crew extinguished the fire and cargo ops were secured. CG inspectors responded/issued a requirement to replace/repair the starboard diesel pump engine. The fire occurred when a lube oil line fitting broke loose under pressure and sprayed lube oil on the hot exhaust manifold. The suspected cause of the incident was vibration/normal wear. No injuries/pollution reported

COMMENT/ Lube oil line fitting failed and allowed lube oil to spray on hot exhaust manifold. Ensuing fire quickly extinguished by barge crew. Engine replaced per CG-2692 issued by NYCMC.

--- EFFECTIVENESS OF EQUIPMENT ---

Approximately five fire extinguishers were emptied while fighting the fire. There were no reports of extinguishers malfunctioning during fire.

--- EFFECTIVENESS OF CREW ---

The mate assisted in extinguishing the fire by shutting off the fuel supply to the stbd deepwell pump motor.

--- DESCRIPTION ---

The starboard diesel pump engine caught on fire when lube oil sprayed on the exhaust manifold from a broken lube oil line fitting. Chief Engineer discovered the fire and extinguished it with portable extinguishers. The barge mate assisted by activating emergency shutdown and securing transfer piping to the facility.

3. The fire occurred when a fitting on the lube oil line leading from the turbocharger to the oil level gauge failed and sprayed lube oil on the hot engine manifold. The exact cause of the fitting failure is not known. Coast Guard inspectors were unable to identify specific conditions that may have caused the fitting to fail due to damage caused by the fire. The engine was due for servicing soon per manufacturers recommendations (every 10,000 hours).

4. The fitting involved was factory-installed. According to the vessel operators, the engine fittings, gauges, etc., are specifically inspected by yard personnel twice annually. Additionally, the company has a service bulletin out to their barge fleet to keep an eye on these installations because they feel that the design is flawed inasmuch as any such line failures may allow oil to come in contact with hot engine parts.

CONCLUSIONS:

1. The cause of the fire was the failure of a lube oil line fitting, allowing lube oil to spray directly on to the engine's exhaust manifold. Possible causes for the line failure include:

- a.) engine vibration
- b.) normal wear and tear

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS07					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					<i>Vessel loses propulsion and/or steering; fire limited to one compartment</i>
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Revised 03/12/98 at 12:12

Event Number: MC95010169 (MSIS07)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil/starboard cargo deep well pump	
Cause	A fitting on the lube oil line from the starboard turbocharger to the oil level gauge failed, spraying lube oil on the hot engine manifold. Possible causes of the line failure include engine vibration and normal wear and tear	
Ignition Source	Hot surface (engine manifold)	
Detection	Crew	
Release Isolation	Crew member pulled engine emergency shutdown and closed the fuel line	
Fire Suppression	Portable extinguisher used	
Impact on Propulsion		Loss of propulsion
Impact on Steering		None
Human Casualty	None	
Corrective Action to Prevent Recurrence		The fitting involved was factory-installed. According to the vessel operators, the engine fittings, gauges, etc., are specifically inspected by yard personnel twice annually. Additionally, the company has a service bulletin out to its barge fleet to keep an eye on these installations because it believes that the design is flawed, inasmuch as any such line failures may allow oil to come in contact with hot engine parts

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EVENT NUMBER: MC95012701

--- INCIDENT BRIEF ---

2000/09AUG95: F/V ANNA K WAS TRANSITING DIXON ENTRANCE WHEN FIRE BROKE OUT IN THE ENGINE ROOM. VESSEL WAS TOTALLY ENGULFED AND SANK, SPILLING APPROXIMATELY 90 GALLONS OF DIESEL FUEL INTO THE WATER, NOV ISSUED. (TK00025420) NO INJURIES.

--- EFFECTIVENESS OF EQUIPMENT ---

Fire was too intense by the time firefighting was started and water had no effect in controlling the fire.

--- EFFECTIVENESS OF CREW ---

Crew abandoned ship immediately when the fire was discovered.

--- SMOKE ---

EXTENT OF SMOKE SPREAD (INCLUDING HOW IT SPREAD):
Entire vessel was engulfed in flames.

--- DESCRIPTION ---

Fire quickly spread throughout the vessel. By the time a firefighting part arrived from USCGC ANACAPA, fire was already out of control and it was too dangerous to stay and fight the fire. Vessel burned to the waterline and sank several hours later.

--- EFFECTIVENESS OF LIFESAVING EQUIPMENT ---

CREW WAS RESCUED BY ANOTHER VESSEL THAT WAS ON SCENE. NO ONE ENTERED THE WATER OR HAD TO USE A LIFERAFT.

Through interviews with the crew and captain of the F/V ANNA K, I tried to get information on the possible cause of the fire. They did not know what caused the fire, but said that it was probably the fuel system because of the intensity of the fire. They stated that by the time they noticed the fire, it was out of control and they were forced to abandon ship.

Upon discussion with the vessel owner and reviewing the CG2692, he felt that the fire was either intentionally set or a fuel line ruptured, spraying fuel onto the exhaust manifold and causing a fire. Further investigation into the cause of the fire was impossible due to the sinking of the vessel.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS08					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					<i>Vessel loses propulsion and/or steering; fire in multiple compartments</i>
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

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Event Number: MC95012701 (MSIS08)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Engine room	Fuel oil
Cause ^b	Sabotage or fuel oil spraying on hot engine parts	
Ignition Source	Sabotage or hot surface (exhaust manifold)	
Detection		Crew
Release Isolation	Unsuccessful. The vessel burned to the waterline and sank	
Fire Suppression	Unsuccessful. The fire was too large to fight with installed equipment. Additional equipment arrived too late	
Impact on Propulsion		Loss of propulsion
Impact on Steering		Loss of steering
Human Casualty	None	
Corrective Action to Prevent Recurrence	No preventative action mentioned	

^bEvent excluded from further analysis because of the suspected sabotage.

[Blank]

EVENT NUMBER: MC95013649

--- INCIDENT BRIEF ---

VESSEL WAS TOWING SUBMERSIBLE TS-9 WHEN IT BEGAN LOSE OIL PRESSURE AND ENGINE TEMP BEGAN TO RISE. SMOKE WAS OBSERVED IN ENGINE ROOM AREA. TOW WAS BROKEN, TS-9 U/W ON OWN POWER. TUG SET ANCHOR. INVESTIGATION OF ENGINE COMPARTMENT REVEALED A FIRE. EMERGENCY PROCEDURES WERE IMPLEMENTED AND FIRE WAS EXTINGUISHED. LITTLE DAMAGE WAS SUSTAINED. APPARENT CAUSE WAS A CRACKED FUEL FITTING DRIPPING FUEL ON HOT ENGINE MANIFOLD.

--- CASUALTY PROLOGUE ---

VESSEL OIL PRESSURE WAS DROPPING AND TEMPERATURES RISING. DISCOVERED FIRE IN ENGINE COMPARTMENT. FIRE WAS EXTINGUISHED. FOUND CRACKED FUEL FITTING.

DESCRIPTION/

SMALL NPT UNION BROKE ALLOWING FUEL TO DRIP ON ENGINE MANIFOLD.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS09					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					<i>Vessel loses propulsion and/or steering; fire limited to one compartment</i>
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Revised 03/12/98 at 12:12

Event Number: MC95013649 (MSIS09)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	Cracked fuel fitting (small union broke, allowing fuel to drip on engine manifold)	
Ignition Source	Hot surface (engine manifold)	
Detection	Crew	
Release Isolation		Shutdown of engine
Fire Suppression	Portable extinguisher	
Impact on Propulsion		Loss of propulsion
Impact on Steering		None
Human Casualty	None	
Corrective Action to Prevent Recurrence	No preventative action mentioned	

[Blank]

EVENT NUMBER: MC95019082

--- INCIDENT BRIEF ---

EXHAUST PIPE CONNECTION AT MANIFOLD CRACKED CAUSING INTENSE HEAT TO MELT AN IMPROPERLY ROUTED FUEL RETURN LINE. WHEN LINE MELTED THROUGH, FUEL SPILLED ON THE EXHAUST AND CAUGHT FIRE.

DESCRIPTION/

FUEL LINE ROUTED TOO CLOSE TO EXHAUST SYSTEM, WHEN EXHAUST PIPE TO MANIFOLD CONNECTION BLEW OUT, HEAT MELTED FUEL RETURN LINE, LEAKING FUEL IGNITED ON HOT MANIFOLD.

--- DESCRIPTION ---

CRACKED EXHAUST PIPE TO MANIFOLD CONNECTION CAUSED ESCAPING HEAT TO MELT IMPROPERLY ROUTED FUEL RETURN LINE. LEAKING FUEL THEN IGNITED ON EXHAUST MANIFOLD. OPERATOR DISCOVERED FIRE, EXTINGUISHED BLAZE BY SHUTTING DOWN ENGINE AND WITH ONBOARD EQUIPMENT.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS10					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					<i>Vessel loses propulsion and/or steering; fire limited to one compartment</i>
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Revised 03/12/98 at 12:12

Event Number: MC95019082 (MSIS10)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	The fuel return line was incorrectly routed too close to the exhaust system. When the exhaust pipe to manifold connection cracked, heat melted the fuel return line. The line leaked fuel that ignited on the hot manifold	
Ignition Source	Hot surface (exhaust manifold)	
Detection	Crew	
Release Isolation	Crew shut down the engine	
Fire Suppression	Portable extinguisher	
Impact on Propulsion		Loss of propulsion
Impact on Steering		None
Human Casualty	None	
Corrective Action to Prevent Recurrence	No preventive action mentioned, but the fuel line routed too close to exhaust manifold	

[Blank]

EVENT NUMBER: MC96000184

--- INCIDENT BRIEF ---

TUG HARRY MACK WAS N/B LMR NEAR MILE 453 (NORTH OF VICKSBURG) PUSHING AHEAD 15 LOADED AND 20 EMPTY BARGES (5X7) WHEN A DRESSER COUPLING ON THE PORT ENGINE MAIN OIL LINE FAILED, SPRAYING HOT OIL. THE OIL IGNITED AND WAS QUICKLY EXTINGUISHED BY THE CREW. HOWEVER, KEVIN KOEHL, A TRAINEE ENGINEER WHO WAS IN THE LOWER LEVEL OF THE ENGINE ROOM, RECEIVED SECOND DEGREE BURNS ON HIS BACK AND ARMS AS A RESULT OF THE HOT OIL.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS11					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Revised 03/12/98 at 12:12

Event Number: MC96000184 (MSIS11)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	A fuel oil (Dresser) coupling broke, resulting in a fuel oil spray	
Ignition Source	Hot surface	
Detection	Crew	
Release Isolation	Not stated	Not inferred
Fire Suppression	Portable extinguishers	
Impact on Propulsion		Loss of propulsion
Impact on Steering		None
Human Casualty	Crewman burned on his back and arms from hot oil	
Corrective Action to Prevent Recurrence	No preventative action mentioned	

[Blank]

EVENT NUMBER: MC96001302

--- INCIDENT BRIEF ---

Vessel was enroute from Yokosuka, Ja to Singapore and sustained fire damage in excess of \$500,000 to engineroom. No injuries occurred but fixed CO2 system was released for e.r. space. Cause of fire was the leaking of lube oil from air deck compressor lube oil cooler (in e.r.) onto diesel generator exhaust pipe lagging, oil dripped down lagging onto 900 degree generator causing a flash fire. See narrative supplement.

DESCRIPTION/

The lube oil cooler for the deck air compressor leaked lube oil. The lube oil cooler was modified and placed outside of a contained compressor system so crew could access it easier for maintenance. Leak started where piping went into pipe union which was tightned by a C clamp. Clamp may have loosen. Notify G-MVI/G-MTH of Equipment Failure IAW VOL II of the MSM.

COMMENT/ Lube oil cooler installation was remodified after fire, cooler was loxered 2 fight and placed on deck with containment, 2 bends in piping were configured to reduce heat expansion. C clamps were removed and replaced by welded flange.

--- EFFECTIVENESS OF EQUIPMENT ---

Extinguishment was unsuccessful using portable agents, Master did not want to expose crew to risk. Fixed CO2 was released and successfully extinguished fire.

--- EFFECTIVENESS OF CREW ---

crew initially tried to fight fire with SCBAs but retreated due to excessive smoke in E.R., wanted to avoid potential disorientation. C/E released fixed CO2

--- DESCRIPTION ---

Lube oil from leaky lube oil cooler leaked onto hot generator igniting a fire on 37' level of e.r.. E.R. was unmanned while crew was having lunch, crew informed of fire via heat & smoke detectors. C/E initially responded with portable ext, then supported by fireteam with SCBAs. Master ordered e.r. evacuated due to heavy smoke and fixed CO2 released, fire was extinguished.

--- COMMENTS ---

While vessel was underway in ballast from Yokosuka Japan to Singapore on 19 Dec 1995 at approximately 1250 there was a severe engineroom (e.r.) fire caused over \$500,000 in damages. Most of the damage was caused to the vessels electrical system, more than 4000 metres of electrical cable had to be replaced, see MI96002263. The fire was caused by a leak in the deck air compressor's lube oil cooler which was located in the e.r.. The lube oil cooler leaked lube oil on to the generators exhaust pipe lagging, the oil dripped down the lagging onto the hot generator and fire flashed back to the leak and exploded, parting the lube oil cooler pipe union. The fire was then being fed lube oil directly from the compressor. The e.r. was unmanned at the time with the crew at lunch break, both heat & smoke detectors sounded. The chief engineer was first on scene and tried extinguishing fire with portable CO2, he was joined shortly thereafter with crew outfitted in SCBAs with charged firehoses and portable extinguishers. Due to excessive thick black smoke the Master evacuated e.r., did not want fireteam members to get disorientated & lost while fighting fire. The Master ordered the fixed CO2 to be released, fire was extinguished by this action. No crew were injured and vessel made way to Singapore for repairs. LCDR Brian Peter boarded vessel at arrival in Singapore on 21 Dec 95 to initiate investigation.

Lube oil cooler was modified to sit outside of compressor unit for easy maintenance access. Two lube oil lines fed into cooler and were joined to

EVENT NUMBER: MC96001302

cooler at pipe unions bounded by C-clamps. The input lube oil line started leaking at the union where C-clamped. The C-clamped loosened due to vibration or incorrect installation. Lube oil started to leak (spray) onto the diesel generator exhaust lagging (approximately 2 feet away). The oil dripped down the insulation (one deck) onto the hot generator (900 degrees) the oil flashed back to point of leak and exploded the lube oil cooler off the feed pipe. Lube oil from the compressor was now directly feeding the fire, igniting three different fires.

During repair period lube oil cooler was satisfactorily remodified to prevent such incidences from occurring in the future.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS12					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					<i>Fire limited to one compartment</i>
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Revised 03/12/98 at 12:12

Event Number: MC96001302 (MSIS12)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil for the air deck compressor/engine room	
Cause	<p>Leak in the lube oil cooler. The leak started where two lube oil lines for the compressor unit were joined to a cooler through union connection tightened with C-clamps. A C-clamp probably loosened due to vibration or incorrect installation, allowing lube oil to drip to deck below the cooler</p> <p>The oil dripped down onto diesel generator exhaust lagging (2 feet below the cooler), ignited, flashed back to compressor, and blew</p>	
Ignition Source	Hot surface (exhaust pipe of a diesel generator)	
Detection	Heat and smoke detectors. The engine room was unmanned at the time because the crew was having lunch	
Release Isolation	The engine room was successfully isolated for the use of the fixed CO ₂ system	Leak isolation was unattempted or unsuccessful
Fire Suppression	The crew initially fought the fire with six portable CO ₂ extinguishers. This was unsuccessful, and the master ordered evacuation of the engine room to activate the fixed CO ₂ system. The CO ₂ system was successful in extinguishing the fire	
Impact on Propulsion		Temporary loss of propulsion. (The vessel eventually made its way to Singapore for repairs)
Impact on Steering		None

Event Number MC96001302 (cont'd)

Event Number: MC96001302 (MSIS12)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
Human Casualty	None	
Corrective Action to Prevent Recurrence	<p>Repairs were performed (about 4,000 meters of electrical cable was destroyed)</p> <p>The lube oil cooler was modified to sit outside of the compressor unit for easy maintenance access. Two bends were included in the lube oil piping to reduce heat expansion damage, and the C-clamps were replaced with a welded flange</p>	

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EVENT NUMBER: MC96015374

--- INCIDENT BRIEF ---

GREAT RIVERS II was transiting on the Columbia River with 111 POB when leaking fuel oil ignited causing a fire in the starboard main engine. The space was closed off and the Halon system was employed. The fire was extinguished and the vessel moored at Kalama. No Injuries occurred. A leaking fuel oil line had been earlier repaired, however, the hose used in this repair was insufficient for the psi pressure and it chafed, leaked fuel oil, & fuel oil ignited on the engine.

DESCRIPTION/

The vessels fuel oil line was worn and the C/E from the prior day had installed a clamp over the leak. On the day of the incident, just after getting underway, a different C/E noticed that the line was leaking again and replaced the line.

Notify G-MVI/G-MTH of Equipment Failure IAW VOL II of the MSM.

DESCRIPTION/

C/E replaced a leaking F.O. line and came in every 10-15 minutes to check the line. The C/E thought the line was under approximately 30 psi and used an air hose to replace it. The line was actually under much higher pressure and chafed and eventually fuel oil leaked into turbo/manifold and ignited.

Notify G-MVI/G-MTH of Equipment Failure IAW VOL II of the MSM.

--- EFFECTIVENESS OF EQUIPMENT ---

Halon System used effectively.

--- COMMENTS ---

Vessel Great Rivers II with 111 POB experienced fire in engine room due to leaking fuel line allowing diesel to spill onto exhaust turbo and manifold. Subsequent smoke and small amount of fire made portable CO2 fire extinguisher not practicable, so vessels Halon system was discharged. No injuries or pollution occurred.

This casualty was caused by failure of engineer to secure leak or make permanent repairs. No licensed engineer required on this vessel. Matter will be brought to attention of company.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS13					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					<i>Fire limited to one compartment</i>
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Revised 03/12/98 at 12:12

Event Number: MC96015374 (MSIS13)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	<p>A chief engineer repaired a leaking fuel oil line by installing a clamp over the leak. Later, on the day of the incident, a different chief engineer noticed that the line was leaking again and replaced the line with a hose. He thought that the line was under 30 psig and used an air hose to replace it. (The line was actually under much higher pressure.) Not being rated for the application, the hose chafed and leaked</p> <p>The MSIS report attributed the cause to "failure of engineer to secure leak or make permanent repairs"</p>	
Ignition Source	Hot surface (probably the turbocharger manifold)	
Detection	Alarm	
Release Isolation	Area ventilation isolated	
Fire Suppression	<p>Portable extinguisher was used but was ineffective because of the smoke</p> <p>The crew used the fixed Halon system to extinguish the fire</p>	
Impact on Propulsion		Temporary loss of propulsion
Impact on Steering		None
Human Casualty	None	
Corrective Action to Prevent Recurrence	No preventative action mentioned	

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EVENT NUMBER: MC93011006

--- INCIDENT BRIEF ---

14JUN93: STARBOARD MAIN DIESEL ENGINE ONBOARD SUBJECT VESSEL CAUGHT FIRE
RESULTING IN \$50K IN DAMAGE.

NO POLLUTION

NO INJURIES,

NO DEATHS,

NO ACTIONABLE MISCONDUCT OR NEGLIGENCE. NO FURTHER ACTION DEEMED NECESSARY.

--- CASUALTY PROLOGUE ---

VESSEL'S STB. MAIN DIESEL ENGINE CAUGHT FIRE.

--- EFFECTIVENESS OF EQUIPMENT ---

VESSEL'S FIXED CO2 SYSTEM WAS SUCCESSFUL IN FULLY EXTINGUISHING THE ENGINE ROOM
FIRE.

--- EFFECTIVENESS OF CREW ---

FIXED CO2 SYSTEM COUPLED WITH CREW'S FIRE FIGHTING EFFORTS EFFECTIVELY
EXTINGUISHED THE FIRE.

--- DESCRIPTION ---

SUBJECT VESSEL WAS PUSHING BARGES SOUTHBOUND WHEN PRE-LUBE PUMP SPRAYED OIL
ONTO THE STBD. MDE CAUSING AN OIL SPAY FIRE.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS14					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					<i>Vessel loses propulsion and/or steering; fire limited to one compartment</i>
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Revised 03/12/98 at 12:12

Event Number: MC93011006 (MSIS14)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil/engine room	
Cause	Pre-lube pump sprayed oil on the starboard main diesel engine, causing an oil spray fire. The cause of pump failure was not discussed	
Ignition Source		Hot surface (probably the engine exhaust)
Detection		Crew
Release Isolation		Engine room isolated (required for effective operation of the CO ₂ system)
Fire Suppression	Fixed CO ₂ system	
Impact on Propulsion		Assume lost when CO ₂ system was activated
Impact on Steering		None
Human Casualty	None	
Corrective Action to Prevent Recurrence	No preventative action mentioned. There was no misconduct or negligence; no further action deemed necessary	

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EVENT NUMBER: MC95005174

--- INCIDENT BRIEF ---

THE M/V LAGONDA EXPERIENCED A SMALL ENGINE ROOM FIRE WHEN A FUEL CANISTER BLEW OUT, CAUSING THE STARBOARD MAIN ENGINE FUEL LINE TO BREAK WHICH IN TURN SPEWED FUEL ONTO THE HOT EXHAUST MANIFOLD. THE FIRE WAS PUT OUT WITH A FIRE EXTINGUISHER AND THE DAMAGE WAS MINIMAL.

DESCRIPTION/

THE FUEL CANISTER BLEW, WHICH CAUSED THE MAIN ENGINE FUEL LINE TO PART.

--- EFFECTIVENESS OF EQUIPMENT ---

THE FIRE EXTINGUISHER APPARENTLY WORKED WELL ON THIS SMALL FIRE.

--- DESCRIPTION ---

THE FIRE WAS QUICKLY BROUGHT UNDER CONTROL USING A PORTABLE EXTINGUISHER. THE DAMAGE WAS MINOR.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS15					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					<i>Fire limited to one compartment</i>
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Revised 03/12/98 at 12:12

Event Number: MC95005174 (MSIS15)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	A fuel canister blew, causing the main fuel line to break. Fuel spewed onto the hot exhaust manifold. The cause of the canister failure was not discussed	
Ignition Source	Hot surface (exhaust manifold)	
Detection		Crew
Release Isolation	Not stated	Not inferred
Fire Suppression	Portable fire extinguisher	
Impact on Propulsion		None
Impact on Steering		None
Human Casualty	None	
Corrective Action to Prevent Recurrence	No preventative action mentioned	

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EVENT NUMBER: MC95014649

--- INCIDENT BRIEF ---

Lube oil line parted, oil sprayed across exhaust manifold & ignited.
Extinguished with no damage. No injuries.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
<div>Event: MSIS16</div>					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					<i>Fire limited to one compartment</i>
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Revised 03/12/98 at 12:12

Event Number: MC95014649 (MSIS16)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil/engine room	
Cause	Lube oil line parted. Oil sprayed across exhaust manifold and ignited. The cause of the lube oil line failure was not discussed	
Ignition Source	Hot surface (exhaust manifold)	
Detection	Crew	
Release Isolation	Not stated	Not inferred
Fire Suppression	Portable CO ₂ extinguisher	
Impact on Propulsion		None
Impact on Steering		None
Human Casualty	None	
Corrective Action to Prevent Recurrence	No preventative action mentioned	

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EVENT NUMBER: MC92000141

--- INCIDENT BRIEF ---

On 5 Jan 92, the M/V ARKANSAS experienced an starboard main diesel engine fire when a fuel fitting cracked and fuel sprayed onto the exhaust.

--- EFFECTIVENESS OF CREW ---

Due to quick action of crew, location and proper use of engine remote shutdown and fire fighting equipment, damage was minimal.

--- DESCRIPTION ---

Timely and correct action by crew coupled with proper placement of safety equipment (MDE emergency shutdown and fixed ext. system) avoided a far more dangerous casualty. The apparent cause of the fire was a threaded nipple on the fuel return side of the fuel system of the stbd MDE. This nipple is not part of the CG approved fuel supply hose assembly.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS17					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					<i>Fire limited to one compartment</i>
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Revised 03/12/98 at 12:12

Event Number: MC92000141 (MSIS17)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	Threaded nipple on the fuel return side of the fuel system on the starboard main diesel engine failed. This nipple is not part of the CG-approved fuel supply hose assembly	
Ignition Source	Hot surface (exhaust manifold)	
Detection	Crew	
Release Isolation	The engine was remotely shut down	
Fire Suppression	Fixed CO ₂ system	
Impact on Propulsion	Partial loss of propulsion (the engine was shut down)	
Impact on Steering		None
Human Casualty	None	
Corrective Action to Prevent Recurrence	No preventative action mentioned	The fuel fitting that failed was not part of the CG-approved fuel hose assembly. If this fitting was inadequate for this application, the root cause of the problem may have been the installation of an incorrect part

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EVENT NUMBER: MC92003590

--- INCIDENT BRIEF ---

Fire on an inspected vessel. Fire started in forward engineroom on or near the fuel transfer pump due to a ruptured gasket between flange and strainer.

--- CASUALTY PROLOGUE ---

Chief Engineer transferring fuel to trim vessel in preparation for offload of cargo.

DESCRIPTION/

Ruptured rubber gasket caused atomized fuel to spray on electrical fixtures igniting fuel causing flames to ignite paint and wooden deck boards resulting in engineroom fire.

Notify G-MVI/G-MTH of Equipment Failure IAW VOL II of the MSM.

--- EFFECTIVENESS OF CREW ---

Crew responded quickly to fire using Scott Air Packs to combat fire.

--- DESCRIPTION ---

Rubber gasket on fuel flange ruptured spraying atomized fuel onto fluorescent lights and electrical fixtures igniting fuel causing wood and paint to ignite resulting in fire and smoke in engineroom.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS18					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					<i>Fire limited to one compartment</i>
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

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Event Number: MC92003590 (MSIS18)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	A rubber gasket on fuel flange ruptured, spraying atomized diesel fuel onto florescent lights and electrical fixtures. The sprayed fuel ignited and caused wood and paint to burn	
Ignition Source	Electrical fixtures	
Detection	Crew	
Release Isolation		Shut down the pump
Fire Suppression	City fire department, portable CO ₂ , and dry chemical extinguishers	
Impact on Propulsion		Temporary loss of propulsion (generators shut down)
Impact on Steering		None
Human Casualty	None	
Corrective Action to Prevent Recurrence	No preventative action mentioned	

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EVENT NUMBER: MC92014048

--- INCIDENT BRIEF ---

Vessel had a fire in the starboard engineroom.

--- DESCRIPTION ---

Fire caused by diesel fuel being sprayed onto the lagged main engine exhaust pipe. After the lagging was soaked, the heat of the piping ignited the fuel. Crew, controls, and fixed system were 100% effective.

--- COMMENTS ---

The passenger vessel Mackinac Express had a fire in the starboard engineroom. The vessel is a catamaran, with separate engine spaces. In the starboard engine space there is a generator mounted transversely aft of the engine. A bleeder valve on the fuel system loosened causing diesel fuel to spray onto the lagged exhaust piping of the main engine. After the lagging soaked, the fuel ignited. The fire was discovered immediately, vents were closed, the fuel supply was secured, and the generator and the main engine were shut down. The fixed halon flooding system was activated and the fire was extinguished immediately. Damage was limited to a small amount of main engine exhaust lagging, one 24 volt light, and minor smoke damage.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS19					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					<i>Vessel loses propulsion and/or steering; fire limited to one compartment</i>
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Revised 03/12/98 at 12:12

Event Number: MC92014048 (MSIS19)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	A bleeder valve on the auxiliary generator diesel leaked onto the lagging. The fuel ignited after the lagging soaked	
Ignition Source	Hot surface (lagged exhaust piping)	
Detection	Crew	
Release Isolation	Crew isolated all vents, secured the fuel supply, and shut down the generator and the main engine	
Fire Suppression	Fixed Halon flooding system	
Impact on Propulsion		Temporary loss of propulsion (all machinery was shut down)
Impact on Steering		None
Human Casualty	None	
Corrective Action to Prevent Recurrence	No preventative action mentioned	

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EVENT NUMBER: MC92014484

--- INCIDENT BRIEF ---

An engine room fire broke out when a fuel pressure guage, located on top of the secondary fuel filter for the starboard main engine, was broken off from its stem threads, causing fuel to spray out and up in the engine room, at approximately 80 psi. This fuel apparently atomized and umbrellaed off the exhaust manifold and top of engine room, and was ignited from the heat of the exhaust manifold.

--- COMMENTS ---

2. At approximately 1110 the morning of the fire, the tug s engineer reports that he was conducting a routine inspection of the engine room, when he noticed fuel leaking by the threads on a starboard main engine fuel gauge, located on top of the secondary fuel filter, aft of the engine. He cleaned up the fuel that was around the gauge, noted that fuel was still seeping out around the threads, and then tried to tighten the gauge by hand. The gauge blew off, discharging fuel vertically into the air, at a pressure of approximately 80 psi. The fuel ignited immediately as it umbrellaed off the bottom of the deck plates, approx. 10 ft. above the gauge site, and the vertical exhaust manifold of the engine, which came to a "Y" approx. 2 ft. above, and just slightly forward of the gauge site. The engineer then shut down the engine via the throttle, and ran topside to inform the rest of the crew. He returned about one minute later to the engine room hatch on the starboard side of the tug, and due to black smoke and heat, was not able to gain access to the space. He went to the galley, grabbed a dry chemical fire extinguisher, returned to the hatch and discharged the extinguisher contents into the engine room in the direction of where he thought the fire to be. He repeated this procedure with an extinguisher from the second deck, and then closed the hatch, having no success in extinguishing the fire.

Meanwhile, the rest of the crew shut down ventilation sources, started a pump to pour water down the aft engine room fan, and to cool the bulkheads. At this time the crew believed they had the fire under control.

Approximately 50 minutes later fire fighters arrived, and ordered the crew off the tug. The fire fighters opened the engine room hatches, other deckhouse doors, and broke windows in the pilot house. Once ventilation was provided to the rest of the deckhouse, the insulation and interior finishing, on the forward side of the bulkhead separating the engine room from the deckhouse, ignited from the transfer of heat through the bulkhead. The fire then spread through much of the starboard side of the deckhouse.

An examination of the gauge revealed that the threads of the gauge had sheared.

There are some random photos of the damage, contained in the MSO Baltimore file.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS20					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					<i>Vessel loses propulsion and/or steering; fire in multiple compartments</i>
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Revised 03/12/98 at 12:12

Event Number: MC92014484 (MSIS20)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	The tug engineer noticed fuel leaking from the threads of a gauge on the starboard main engine. He attempted to tighten the gauge by hand, but the gauge blew off, discharging fuel vertically into the air at a pressure of about 80 psig. The fuel ignited immediately as it splashed off the bottom of the deck plates, approximately 10 feet above the gauge	
Ignition Source	Hot surface (exhaust piping)	
Detection	Crew (tug engineer) was present when the release occurred	
Release Isolation	The tug engineer shut down the engine. The rest of the crew secured hatches and vents. When firefighters arrived, they opened hatches, broke windows, and opened other air paths. These actions allowed air into previously isolated locations, probably reigniting fires	
Fire Suppression	The crew unsuccessfully used two portable extinguishers and then secured hatches and vents. No description provided of the equipment used by firefighters	
Impact on Propulsion		Loss of propulsion
Impact on Steering		None
Human Casualty	None	
Corrective Action to Prevent Recurrence	No preventative action mentioned	

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EVENT NUMBER: MC92015413

--- INCIDENT BRIEF ---

GROUP SAULT STE. MARIE REPORTED RUPTURE OF LUBE OIL LINE IN VSL'S E/R CAUSED SMALL FIRE WHICH WAS QUICKLY EXTINGUISHED. VESSEL SECURED PROPULSION AND DROPPED BOTH ANCHORS FOR DESMOKING OPS, THEN PROCEEDED DOWNBOUND INTO LAKE HURON WHILE MAKING REPAIRS. DAMAGE DESCRIBED AS COSMETIC ONLY. ADVISED MIO ST. IGNACE (VSL TO SUBMIT 2692 TO). ALSO INFORMED CAN. CG SHIP SAFETY BRANCH, SARNIA, ONT.

--- FIRE/EXPLOSION ELEMENTS ---

LOCATION/ ENGINE ROOM

SOURCES:

IGNITION/ HEAT FROM MAIN ENGINE ADJACENT TO FRACTURED LUBE OIL LINE

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS21					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					<i>Fire limited to one compartment</i>
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					<i>Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment</i>
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

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Event Number: MC92015413 (MSIS21)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Lube oil/engine room	
Cause	Lube oil line fractured in engine room	
Ignition Source	Hot surface (main engine)	
Detection	Crew	
Release Isolation		Secured engine
Fire Suppression	Portable CO ₂ extinguisher	
Impact on Propulsion	Temporary loss of propulsion. (The crew secured propulsion and dropped anchor for desmoking only)	
Impact on Steering		None
Human Casualty	None	
Corrective Action to Prevent Recurrence	No preventative action mentioned	

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EVENT NUMBER: MC93000135

--- INCIDENT BRIEF ---

2A/ENG. WAS WORKING ON FUEL LINES IN PREP. FOR WINTER LAYUP. THE PIPING HE WAS WORKING ON PRODUCED PRODUCT, HE WAS SPRAYED WITH PRODUCT AND BECAME ENGULFED IN FLAME, THE FIRE SPREAD TO OTHER PARTS OF THE FIRE ROOM WHERE IT WAS EXTINGUISHED BY CREW MEMBERS AND A BURST POTABLE WATER PIPE. THE L/E WAS MED-EVACED BY LOCAL EMS PERSONNEL AND DIED AT THE HOSPITAL APPROX. 21 HOURS LATER.

--- DESCRIPTION ---

SNM WAS FLUSHING FUEL LINES TO CLEAN OUT BUNKER C OIL. HE WAS USING A TORCH TO HEAT VALVES TO LOOSEN SLUDGE PRODUCTS WHEN THE #2 DIESEL OIL BEING USED AS A SOLVENT SPRAYED FROM THE DRAIN VALVE HE WAS WORKING ON AND IGNITED, CAUSING THE VICTIM TO BECOME ENGULFED IN FLAMES OVER 80 PERCENT OF HIS BODY.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS22					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

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Event Number: MC93000135 (MSIS22)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	At the time of the fire, the ship was being winterized, and the ship's second assistant engineer was removing bunker C heavy oil from fuel lines. He used a propane torch and solvent to heat and loosen a line plug. When the plug dissolved, a mixture of #2 diesel oil and #6 diesel oil was released through a drain valve, coming in contact with the flame of the propane torch	
Ignition Source	Propane torch used to heat up the line	
Detection	Crew	
Release Isolation	Transfer pump was stopped	
Fire Suppression	Portable CO ₂ extinguishers	
Impact on Propulsion		None
Impact on Steering		None
Human Casualty	Victim died from burns	
Corrective Action to Prevent Recurrence	<p>Notify others operators of this event</p> <p>Establish written procedures for removing fuel from lines when cold boiler firings are used during layups and ensure compliance with the procedure</p> <p>Prior to seasonal layup, the entire crew should be trained in firefighting, fire aid, and the location of use of equipment</p>	

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EVENT NUMBER: MC93009085

--- INCIDENT BRIEF ---

F/V SOUTH SEAS underway in Thimble Shoal Channel suffered an engine room fire and burned with 3 POB. The crew abandoned the vessel and were rescued by CG41500. MSO dispatched the Hampton Roads Maritime Incident Response Team (MIRT) to the vessel and the MIRT assisted the CG units in extinguishing the fire. The vessel was towed to Hampton, VA.

DESCRIPTION/

High pressure fuel oil line leading to a cylinder from the engine's fuel oil pump leaked and sprayed fuel oil on to the turbocharger and exhaust manifold which caused the fire.

Notify G-MVI/G-MTH of Equipment Failure IAW VOL II of the MSM.

COMMENT/ If lagging, deflector plates or a guard had been installed on the engine to protect the hot exhaust manifold and turbocharger, this fire could have been prevented.

--- EFFECTIVENESS OF CREW ---

Crew was poorly trained. Crew did not secure the engine. If the engine had been secured the fuel to the fire would have been stopped.

--- SMOKE ---

EXTENT OF SMOKE SPREAD (INCLUDING HOW IT SPREAD): Smoke spread throughout the vessel, starting in the engine room then entering the fwd storage compartment and deck house area.

IMPACT OF SMOKE ON FIREFIGHTING EFFORTS:

Smoke, heat, and fire prohibited the crew from fighting the fire with the exception of one attempt with a portable extinguisher.

--- DESCRIPTION ---

Fire originated in the aft stbd corner of the engine room. It is suspected that f/o under pressure sprayed from a loose high pressure f/o line on the main engine. The f/o hit the hot turbocharger and burst into flames. The crew did not secure the engine so the engine's f/o pump continued to provide f/o to the fire.

--- COMMENTS ---

The vessel received extensive damage from the fire. The deck house was completely gutted, the plating in the deck house and pilot house, including the overhead, was heavily buckled and distorted. The heat was so intense that the life raft, still in its container, was melted atop of the house.

In the engine room the aft starboard section received the heaviest damage. The suspected cause of the fire was the main engine's high pressure fuel lines. It appears that a high pressure fuel line somehow developed a leak and sprayed fuel oil, under pressure, on to the hot turbocharger and exhaust manifold. When the fuel oil hit the turbocharger/manifold, it burst into flames. Since the engine was not secured, fuel was continually fed to the fire. The flames heated up a nearby lube oil storage tank and melted it's sight glass. The lube oil drained out of the tank and was added to the fire. The heat also caused the engine's "Racor" fuel filters to melt and the fuel oil was dumped directly to the bilge which also added to the fire. (It is beleived that this was what eventually secured the engine because this cut off fuel to the engine.) Since there was no door separating the engine room from the forward storage space and the hatch in the forward storage space had a ventilation funnel installed in it, the fire had plenty of air. The open ladder way leading from the engine room up to the house made a perfect "chimney" for the fire.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS23					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Revised 03/12/98 at 12:12

Event Number: MC93009085 (MSIS23)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	High pressure fuel oil line leading to a cylinder from the engine's fuel oil pump leaked and sprayed oil on to the turbocharger and exhaust manifold, which caused the fire	
Ignition Source	Hot surface (turbocharger and exhaust manifold)	
Detection	Crew	
Release Isolation	None (crew did not stop engine to isolate the source of fuel)	
Fire Suppression	The crew used a portable fire extinguisher, but they were unsuccessful in extinguishing the fire	
Impact on Propulsion	Loss of propulsion	
Impact on Steering		None
Human Casualty	Two minor injuries	
Corrective Action to Prevent Recurrence	<p>This fire could have been prevented if lagging, deflector plates, or a guard had been installed to protect the hot exhaust manifold and turbocharger</p> <p>Methods to close off pathways from the engine room to other compartments should be available</p> <p>Proper firefighting skills would have reduced the extent of the damage</p>	

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EVENT NUMBER: MC93009508

--- INCIDENT BRIEF ---

While upbound at mi. 507.5 LMR, the KARMEN P experienced an engineroom fire when a fuel line on the port main engine split and sprayed on the exhaust igniting the fire. The fire was extinguished, engine restarted and the tow continued. Damage rptd at \$1000. No personnel injuries. See MCNS.

--- COMMENTS ---

On 30 May 93 while upbound at mi. 507.5 with 08 loaded diesel barges, the KARMEN P rptd an engineroom fire centered over the port main engine. The fire had started when a fuel line burst and sprayed fuel on the exhaust over the engine. The fire was extinguished by the crew in approx. 10 minutes. Part of the crew was putting out a cooling mist with a fire hose while the engineer was cutting off fuel and then shut the engine. Once the fuel was cut off, the fire was easily extinguished with CO2 fire extinguishers.

At some point during the fire or immediately afterwards, the clutch on the starboard engine lost air due to an air line being burned and starting getting hot rendering that engine inoperable. Without incurring anymore damage, they were able to isolate the line (another pressuring monitoring line) and restore air to the clutch and restart the starboard engine. They were then able to push into the bank and repair/restart the port engine.

The fuel line in question was a pressure monitoring line that ran from the engine to the control room that developed a crack (approx. one inch) just before a ninety degree bend that ran back to the control room. This particular section had been replaced two days before due to wear. The original piece was plastic coated steel and the replacement just plastic. There was no better quality material on board at the time.

No one on board had any formal company training concerning fire fighting although they appeared to make all the right moves. Their quick thinking and actions kept this casualty to a much smaller problem than it surely could have been.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS24					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					<i>Fire limited to one compartment</i>
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

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Event Number: MC93009508 (MSIS24)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	A split in the port main engine fuel line sprayed fuel on the exhaust, igniting the fire	
Ignition Source	Exhaust line	
Detection	Crew	
Release Isolation	The crew first cut off fuel. Then, they secured the engine	
Fire Suppression	Fixed water system Portable CO ₂ extinguisher	
Impact on Propulsion	Partial loss of one of two engines	
Impact on Steering	None	
Human Casualty	None	
Corrective Action to Prevent Recurrence	No preventative action mentioned	

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EVENT NUMBER: MC93009586

--- INCIDENT BRIEF ---

Fire in the machinery space on the stbd side. Fire believed to have started in the vicinity of the prime mover for the stbd cargo pump. Cause was originally reported as the PTO, which was eliminated upon disassembly. Fuel leak above exhaust manifold and missing cover on PTO allowing oil to be slung in vicinity of exhaust are possible causes. The fire was extinguished by the facility and City of Phil fire Dept's. Repairs were completed in New York..

--- DESCRIPTION ---

Fire started in vicinity of the stbd cargo pump prime mover. Source of ignition was unknown. Possible fuel dripping on hot manifold or oil being slung from PTO through missing cover in vicinity of hot exhaust are possible causes.

--- COMMENTS ---

The Port Engineer Mr Hauns Hagen stated he believed a fuel line for the generator on the upper level was leaking fuel onto the exhaust manifold of the stbd cargo pump engine was the cause of the fire.

A review of the last inspection book from MIO New York and the MIAR's from previous inspection did not reveal a history of any problem with the machinery or house keeping. The vessel appears to have been ready for inspections, but the fact of the fire and the condition of the port cargo pump engine area, leads one to believe that proper maintenance is not being conducted between inspections.

46 CFR 34.50-10(a) requires one B-II extinguisher for the machinery space. The barge has 2 B-II in the machinery space and 1 B-II in the pump room. Yet this vessel has three generators, two cargo pump engines and a fluid thermal heater. A B-V is required in the cargo area and is installed on this barge. The most likely place for a fire is in the machinery space. On a passenger vessel a fixed system is required on vessels with oil fired boilers. The chance of personnel casualty on a passenger is greater, the possibility of a fire is greater on a tank barge with this much machinery, without a licensed engineer, performing maintenance.

The fire was extinguished by the local fire department flooding the space with dry chemical and than the use of CO2 on a few small fires that remained in area of pump engine upon entrance. Had this fire broke out at a different location, where the fire fighting capabilities were not as good, this would of been a major casualty. A recommendation to have a fixed system installed on barges with thermul fluid heaters, or a B-V for machinery spaces with more than two engines is being submitted.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS25					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					<i>Fire limited to one compartment</i>
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Revised 03/12/98 at 12:12

Event Number: MC93009586 (MSIS25)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	Fuel leaking from a line for a generator on the upper level dripped on the exhaust manifold of the starboard cargo pump engine	
Ignition Source	Hot surface (exhaust line for the starboard cargo pump engine)	
Detection	Crew	
Release Isolation	None	
Fire Suppression	The local fire department used dry chemical and CO ₂ extinguishers. The onboard equipment not used	
Impact on Propulsion		None
Impact on Steering		None
Human Casualty	None	
Corrective Action to Prevent Recurrence	A recommendation was made to amend 46 CFR 34.50-10 regarding additional fire extinguishers on board. However, this recommendation was not endorsed by Headquarters	

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EVENT NUMBER: MC94019736

--- INCIDENT BRIEF ---

E/R FIRE ONBOARD VESSEL WHILE IN GOM. FIRE DISCOVERED BY CREW AT APPROX. 0545, FIRE BURNED OUT OF CONTROL, CREW ABANDONED VESSEL APPROX 3-5 MIN. LATER. BURNED INTERIOR OF VESSEL. CREW SAW FLAMES COMING FROM E/R. IO AND INSPECTOR INVESTIGATED PORT ENGINE, FOUND CRACKED FUEL LINE STEEL NIPPLE, BELIEVE THAT NIPPLE CRACKED SPRAYING FUEL ON HOT TURBO. MINOR DAMAGE TO E/R, REMAINING VESSEL COMPARTMENTS DESTROYED. SEE MCNS

--- DESCRIPTION ---

CREW FOUND FIRE IN E/R, FIRE OUT OF CONTROL, NO FIRE FIGHTING EFFORT. CREW ABANDONED VESSEL 3-5 MINUTES AFTER FIRE DISCOVERED.

--- COMMENTS ---

VESSEL CREWMEMBERS, MR. GARVIS DAVIS AND MR. ROY McNAB, REPORTED INJURIES HOWEVER, THE INJURIES DID NOT MEET THE REPORTING REQUIREMENTS OF 46 CFR 4.05-1(e).

THE APPARENT CAUSE OF THE FIRE WAS A BROKEN FUEL LINE ON THE PORT ENGINE. THIS BROKEN FUEL LINE SPRAYED DIESEL FUEL ON THE HOT TURBO CHARGER CAUSING THE FUEL TO IGNITE. CONTRIBUTING CAUSE MAY HAVE BEEN IMPROPER APPLICATION, IN THAT A IMPROPER THIN WALLED FUEL NIPPLE WAS USED.

THE APPARENT CAUSE OF THE INJURY TO MR. WADE MILLER WAS IMPROPER MOVEMENT, IN THAT HE ATTEMPTED TO LIFT THE VESSEL'S LIFERAFT FROM IT'S RACK WITHOUT HELP.

NO EVIDENCE OF ACTIONABLE NEGLIGENCE OR MISCONDUCT. NO INDICATION THAT EITHER DRUGS OR ALCOHOL WERE INVOLVED IN THIS CASUALTY.

ALTHOUGH THIS CASUALTY IS A MAJOR MARINE INCIDENT, ADVANCE NOTIFICATION WAS NOT GIVEN DUE TO THE UNKNOWN REPAIR COSTS.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS26					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					<i>Vessel loses propulsion and/or steering; fire in multiple compartments</i>
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

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Event Number: MC94019736 (MSIS26)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	A nipple on the fuel line to the port engine cracked. An improper, thin-walled fuel nipple had been installed	
Ignition Source	Hot surface (turbocharger)	
Detection	Crew	
Release Isolation	None	
Fire Suppression	None (crew abandoned the vessel)	
Impact on Propulsion		Loss of propulsion
Impact on Steering		Loss of steering
Human Casualty	Crew member injured back while moving life raft	
Corrective Action to Prevent Recurrence	No preventative action mentioned	Use of proper equipment (nipple)

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EVENT NUMBER: MC94022012

--- INCIDENT BRIEF ---

The M/V LIZ ALMA was north bound in the LMR enroute to moorings after assisting the M/V DOCETAURUS to anchorage. The crew heard the Engine Room fire alarm sound and investigated. The engineer opened the door to the engine room and found a fully involved fire at the aft end of the port main engine. The Engineer notified the operator. Access to the engine room nor closing the door was possible due to heat and smoke. Crew abandoned to M/V LEO alongside.

DESCRIPTION/

A steel 3/8" by 2" pipe nipple located just after the secondary fuel oil filter with approximately 70 psi of fuel oil pressure cracked at the base of the threads. This crack encompassed 1/3 of the circumference of the nipple. The pressurized fuel sprayed onto the turbo and exhaust manifold. Notify G-MVI/G-MTH of Equipment Failure IAW VOL II of the MSM.

--- EFFECTIVENESS OF CREW ---

Fire was too fully involved for the crew to be effective in fighting the fire without taking an extreme risk of personnel injury.

--- DESCRIPTION ---

The fuel line leak sprayed fuel on the exhaust manifold and the turbo charger of the port main engine. Fire ignited and was pulled into turbo charger inlet; delaying detection. The turbo air hose melted and turbo started fanning the fire. Fire detected. Door opened to galley. Evacuation in less than 30 seconds. Abandoned vessel. Taken in tow. Fire fighting efforts commenced.

--- COMMENTS ---

Investigation findings:

1. The fire was fueled by diesel fuel spraying from a cracked pipe nipple in the port engine fuel line just after the secondary fuel oil filter. Fuel oil sprayed from this crack onto the port engine exhaust manifold and turbo charger. The cause of the crack is unknown. The pipe was supported well and showed no reason to fatigue.
2. Ignition was caused by the normal operating surface temperatures of the turbo charger exhaust side or the exhaust manifold.
3. The resulting fire possibly went unnoticed due to the fire being drawn into the turbo charger air inlet.
4. The engine over speed was possibly caused by the extreme heat and possible internal damage suffered by the turbo charger. Unburnt vapor would have also entered the turbo charger along with the flames and smoke.
5. The fire alarm system was operational, however, the fire went undetected due to smoke being removed from space by the port main engine.
6. The fire fighting gear onboard the two vessels, LIZ ALMA and LEO would not have been enough equipment to combat the fire without placing the fire fighters in extreme danger.
7. Placing the M/V LIZ ALMA in tow was a very prudent action on the part of all involved parties.

Post Incident Actions By Owner.

1. New, improved fire alarm system is being installed which will include photo eyes for seeing fires in the engine room. Heat and smoke detectors will be placed in more areas in the engine room.
2. A fixed fire fighting system will be installed.
3. The air intakes are going to be routed to the outside decks utilizing ducting.
4. Copper tubing in the fuel system will be replaced with fire resistant, flexible hose (ie. Aeroquip FC-264).
5. All fittings installed in the fuel system will be steel construction.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS27					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					<i>Vessel loses propulsion and/or steering; fire in multiple compartments</i>
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

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Event Number: MC94022012 (MSIS27)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	A cracked pipe nipple in the fuel line for the port engine sprayed fuel onto the engine exhaust manifold and turbocharger	
Ignition Source	Hot surface (exhaust manifold and turbocharger of the port engine)	
Detection	First detected by crew. The fire alarm in the engine room also activated	
Release Isolation	None	
Fire Suppression	A fire boat and the local fire department extinguished the fire. No onboard equipment was used	
Impact on Propulsion		Loss of propulsion
Impact on Steering		None
Human Casualty	None	
Corrective Action to Prevent Recurrence	Post-accident actions by owner: <ol style="list-style-type: none"> 1. Installed improved fire alarm system 2. Installed a fixed firefighting system 3. Air intakes will be rerouted to the outside 4. Copper tubing will be replaced with fire resistant flexible hose 5. All fittings will be steel construction 	

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EVENT NUMBER: MC93011638

--- INCIDENT BRIEF ---

On 28 Jun 93 at approx. 1035, the Murray L II while pushing two loaded grain barges downbound was gutted by fire at mi. 176 White River. The fire, which started in the engine room when a fuel line broke and sprayed on the exhaust, reached the wheelhouse and burned itself out at approx. 1900. Damage rptd at 750,000. No injuries to crew. No damage to barges. No pollution.

--- EFFECTIVENESS OF EQUIPMENT ---

Fire too large for portable extinguishers when discovered.

--- COMMENTS ---

On 28 Jun 93 at approx. 1035, the Murray L II while pushing two loaded grain barges downbound was gutted by fire at mi. 176 White River. The fire, which started in the engine room when a fuel line broke and sprayed on the exhaust, reached the wheelhouse and burned itself out at approx. 1900. Damage rptd at 750,000. No injuries to crew. No damage to barges. No pollution.

After it started, the engineer on watch secured the emergency fuel shutoff and unsuccessfully tried to put the fire out with two portable fire extinguishers. Within 15 minutes of the fire starting, the crew abandoned the towboat and went to the front of the barges. With the help of several passing recreational boats and the local sheriff's boat, they were finally able to stop the tow and secure it to the bank two miles downriver.

After it cooled and fuel taken off, the boat was towed back to Augusta Barge for further investigation by two independent surveyors. The fire started on the port main engine where the fuel line connected to the "sentinel unit" parted, spraying fuel on the exhaust. The sentinel is a device which shuts off fuel to the engine when a critical function fails (eg. low oil pressure). The unit was installed when the engines were overhauled in June 1992. Neither surveyor could offer any preventative maintenance process that could have been done to keep the fuel connection from failing.

Augusta Barge holds no training in fire fighting. The engineer Jerry Hicks, the only crewman with fire fighting experience, received training in the Navy. Augusta Barge is looking into contracting some formal training.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS28					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					<i>Vessel loses propulsion and/or steering; fire in multiple compartments</i>
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

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Event Number: MC93011638 (MSIS28)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	Fuel line broke	
Ignition Source	Hot surface (exhaust line)	
Detection	Crew	
Release Isolation	Engineer on watch secured the emergency fuel shutoff	
Fire Suppression	The crew abandoned the ship shortly after the fire started, and the fire burned itself out in about 9 hours. The crew had little firefighting experience	
Impact on Propulsion		Loss of propulsion
Impact on Steering		None
Human Casualty	None	
Corrective Action to Prevent Recurrence	Improved firefighting capabilities for the crew	

[Blank]

EVENT NUMBER: MC93017819

--- INCIDENT BRIEF ---

Smoke was noticed coming out of the engine room vent. The Captian found white smoke in the engine room. Apparently, one of the fuel lines had leaked and sprayed fuel on the engine blower. After the fuel system was secured, repairs were made. Repairs were inspected by the Coast Guard on 5 July 1993.

--- CASUALTY PROLOGUE ---

The fire resulted from a ruptured fuel line on the starboard main engine. It was contained in the engine room. Repairs were inspected.

--- EFFECTIVENESS OF CREW ---

The fuel system was secured. When the smoke cleared from the engine room, repairs were made.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS29					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					<i>Fire limited to one compartment</i>
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

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Event Number: MC93017819 (MSIS29)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	A fuel hose ruptured and sprayed fuel oil on the engine blower	
Ignition Source		Hot surface
Detection	Crew	
Release Isolation	The crew secured the fuel oil supply	
Fire Suppression	None required once fuel supply isolated	
Impact on Propulsion	Engine temporarily secured	
Impact on Steering	None	
Human Casualty	None	
Corrective Action to Prevent Recurrence	No preventative action mentioned	

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EVENT NUMBER: MC93018003

--- INCIDENT BRIEF ---

VSL SUFFERED E/R FIRE WHILE U/W IN HSC. CAUSE DETERMINED TO BE FAULTY FUEL INJECTORS FOR STBD MDE SPRAYING FUEL OIL ON HOT EXHAUST MANIFOLD, IGNITING A FIRE. CREW SUCCESSFULLY EXTINGUISHED FIRE WITH NO INJURIES OR POLLUTION REPORTED. FURTHER INVESTIGATION REVEALED HISTORY OF FUEL INJECTOR PROBLEMS AND ENGINE HAD BEEN RECENTLY SERVICED BY SHORE PERSONNEL. NO EVIDENCE OF NEGLIGENCE OR MISCONDUCT BY CREW. ESTIMATED COST TO REBUILD ENGINE IS \$15,000.

DESCRIPTION/

FAULTY FUEL INJECTORS FOR STBD MDE SPRAYED FUEL ON EXHAUST MANIFOLD, IGNITING A FIRE IN THE E/R.

--- DESCRIPTION ---

FAULTY FUEL INJECTORS ON STBD MDE SPRAYED FUEL ON EXHAUST MANIFOLD, IGNITING FIRE. FIRE EXTINGUISHED BY CREW WITHIN 20 MINUTES OF DISCOVERY. DAMAGE LIMITED TO STBD MDE.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS30					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					<i>Fire limited to one compartment</i>
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

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Event Number: MC93018003 (MSIS30)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	A faulty fuel injector for the starboard main diesel engine resulted in fuel being sprayed onto the exhaust manifold	
Ignition Source	Hot surface (exhaust manifold)	
Detection	Crew	
Release Isolation		Engine stopped
Fire Suppression	The crew extinguished the fire in about 20 minutes using three B-II fire extinguishers	
Impact on Propulsion		Temporary loss of propulsion when the engine was secured
Impact on Steering		None
Human Casualty	None	
Corrective Action to Prevent Recurrence	No preventative action mentioned	

[Blank]

EVENT NUMBER: MC93021237

--- INCIDENT BRIEF ---

Vessel experienced an engine room fire. The fire was isolated to the blowers on the starboard engine. All of the machinery was shutdown and the fire extinguished. Heat from the fire in the blowers damaged the wiring leading to the ship service air compressors and some of the over-head lighting. The lack of air prevented main propulsion engines from being restarted. Vessel was towed "dead ship" back to Intracoastal City.

DESCRIPTION/

NO. 2 FUEL INJECTOR ON STBD MAIN BROKE OFF CAUSING FIRE.

--- DESCRIPTION ---

FIRE WAS ISOLATED TO AIR BOXES ON TOP OF STBD ENGINE. GENERATED HEAVY SMOKE. HEAT RADIATING FROM BOXES DAMAGED WIRING PASSING IN CLOSE PROXIMITY OVER STBD MAIN ENGINE.

--- COMMENTS ---

(1) Temporary repairs were effected at Intercoastal City. These repairs were to the satisfaction of the attendant Coast Guard Inspector from MSD Broussard who allowed the vessel to proceed to Main Iron Works, in Houma, LA., for permanent repairs. A thorough post casualty exam revealed that the No. 2 injector tip on the inboard head of the STBD Main had broken off. This caused fuel to enter the air boxes where it was ignited by the heat from the supercharger. It appears that water had entered the fuel system at sometime which damaged the injector tip. Subsequently, the engine was completely overhauled including replacement of all injectors.

(2) When the fire was discovered, the crew immediately shutdown all machinery and ventilation in the space. Sufficient time elapsed so that the vessel lost the air head pressure necessary to restart the mains and generators. Power from the generators was necessary to operate the ship service air compressors. Even with the generators operating, the damaged wiring leading to the compressors would have prevented them from operating. All of the wiring was replaced and tested.

CONCLUSIONS: (1) There is no sign of negligence or misconduct on the part of any crew member; (2) There is no sign that alcohol or drugs played a part in this marine casualty; (3) The crew responded to the situation in a competent and reasonable manner; (4) The owner acted responsibly by making the appropriate notifications and effecting all necessary repairs; (5) The marine safety concerns in this incident have been addressed and remediated.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS31					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					<i>Vessel loses propulsion and/or steering; fire limited to one compartment</i>
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Revised 03/12/98 at 12:12

Event Number: MC93021237 (MSIS31)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	The No. 2 fuel injector on the starboard main diesel engine broke off. It appears that water entered the fuel system, damaging the injector tip	
Ignition Source	Hot surface (super charger)	
Detection	Crew	
Release Isolation	The crew shut down all machinery and ventilation	
Fire Suppression	Portable extinguishers	
Impact on Propulsion	Loss of propulsion. The heat from the fire damaged the wiring leading to the ship's service air compressors. The lack of air prevented the main propulsion engines from being restarted	
Impact on Steering	Not stated	Not inferred
Human Casualty	None	
Corrective Action to Prevent Recurrence	No preventative action mentioned. The engine was completely overhauled, including replacement of all injectors	

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EVENT NUMBER: MC93022924

--- INCIDENT BRIEF ---

WHILE OPERATING IN THE VICINITY OF PARKER RIDGE, THE MAIN ENGINE DEVELOPED A FUEL LEAK. THE LEAKING FUEL IGNITED AND FIRE SPREAD THROUGHOUT THE ENGINE ROOM. THE CREW EXTINGUISHED THE FIRE USING O/B PORTABLE EXTINGUISHERS. THE FIRE WAS CONTAINED TO THE E/R. ELECTRICAL POWER WAS LOST AND THE MAIN ENGINE WAS SEVERLY DAMAGED. THE VSL WAS TOWED TO PORTLAND BY THE F/V INTREPID. DAMAGE WAS ESTIMATED AT \$50,000.00. NO INJURIES RESULTED.

DESCRIPTION/

Fuel fitting on supply line for main diesel engine loosened under service. Fitting was located on top of main diesel engine, resulting fuel spill ignited.

Notify G-MVI/G-MTH of Equipment Failure IAW VOL II of the MSM.

COMMENT/ Fire resulted in total loss of vessel propulsion and steering and disabled vessel electrical system.

--- EFFECTIVENESS OF EQUIPMENT ---

Portable extinguishers effective in extinguishing fire.

--- DESCRIPTION ---

A fuel leak developed from a fuel line fitting located on top of the main diesel engine. Resulting fuel spill ignited on surface of diesel engine and spread to adjacent combustible materials. Fire disabled vessel propulsion and electrical system. Crew able to control and extinguish fire utilizing portable dry chemical extinguishers.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS32					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					<i>Vessel loses propulsion and/or steering; fire limited to one compartment</i>
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

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Event Number: MC93022924 (MSIS32)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	A fuel line fitting located on top of the diesel engine developed a leak	
Ignition Source	Hot surface (diesel engine)	
Detection	Crew	
Release Isolation	Engine was shut down	
Fire Suppression	Portable dry chemical extinguishers	
Impact on Propulsion	Total loss of propulsion	
Impact on Steering	Total loss of steering	
Human Casualty	None	
Corrective Action to Prevent Recurrence	No preventative action mentioned	

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EVENT NUMBER: MC94002414

--- INCIDENT BRIEF ---

DURING THE EARLY MORNING HOURS OF 30JUN93 THE M/V VALVOLUME, EXPERIENCED AN ENGINE ROOM FIRE. THE CAUSE OF THE FIRE WAS A RESULT OF FUEL SPRAYING ONTO THE PORT MAIN ENGINES EXHAUST MANIFOLD. THE SPRAY OF DIESEL FUEL WAS DUE TO A FITTING COMING LOOSE AND BACKING OFF OF THE THE FUEL HOSE/LINE JOINT CONNECTION.

--- COMMENTS ---

DURING THE EARLY MORNING HOURS OF 30 JUNE 1993 THE M/V VALVOLUME (D916834), EXPERIENCED A FIRE IN THE ENGINE ROOM. THE VALVOLUME WHICH IS OWNED AND OPERATED BY THE ASHLAND OIL COMPANY, WAS OPERATING ON THE OHIO RIVER NEAR WELLSVILLE, OH. THE CAUSE OF THE FIRE WAS FROM FUEL OIL SPRAYING ON TO THE PORT ENGINES EXHAUST MANIFOLD. THE SPRAY WAS FROM A LOOSE FUEL LINE CONNECTION FOR THE NUMBER THREE ENGINE CYLINDER. THIS FITTING HAD BACKED OFF AT THE HOSE/LINE CONNECTION JOINT.

THE FIRE WAS ISOLATED TO THE AREA OF THE EXHAUST MANIFOLD AND THE INBOARD SIDE OF THE PORT ENGINE. UPON EXTINGUISHMENT OF THE FIRE THE NUMBER THREE CYLINDERS' FUEL LINE WAS INSPECTED, TORQUED TO MANUFACTURERS SPECIFICATIONS AND TESTED.

IT IS OF NOTE THAT THE QUICK RESPONSE OF THE CREW IS ATTRIBUTED TO MONTHLY DRILLS WHICH THE CREW LEARNS THROUGH HANDS ON TRAINING TO RESPOND TO SUCH EMERGENCIES.

IT IS ALSO OF NOTE THAT ASHLAND OIL COMPANY HAS TWO SISTER VESSELS, WITH THE SAME ENGINES AND FUEL SYSTEMS. ASHLAND REPRESENTATIVES BELIEVES THIS IS AN ISOLATED INCIDENT AND HAVE NOT HAD ANY PROBLEMS IN THE PAST WITH FUEL LINE FITTINGS BACKING OFF.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS33					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					<i>Fire limited to one compartment</i>
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

Event Number: MC94002414 (MSIS33)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	The fitting on the port main engine came loose and backed off the fuel hose/line joint connection	
Ignition Source	Hot surface (exhaust manifold)	
Detection	Heat and smoke detectors in the engine room	
Release Isolation		None
Fire Suppression	<p>The crew put out the fire using the following extinguishers:</p> <ul style="list-style-type: none"> • Two 50# CO₂ hose reel (semi-portable) units • Five 10# dry chemical units • One 10# portable CO₂ unit 	
Impact on Propulsion		Partial (and temporary) loss of propulsion
Impact on Steering		None
Human Casualty	None	
Corrective Action to Prevent Recurrence	No preventative action mentioned. Good training of crew was mentioned as a factor that may have helped reduce the consequences of this event	

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EVENT NUMBER: MC94007126

--- INCIDENT BRIEF ---

M/V VIGILANT WAS O/B IN CRYSTAL RIVER CHANNEL PUSHING AHEAD BARGE LOUISE HOWLAND. AN ENGINE FIRE STARTED ABOARD M/V VIGILANT AND THE ENGINEER OF M/V VIGILANT SECURED THE ENGINE CAUSING A PARTIAL LOSS OF STEERING IN A BEND IN THE CHANNEL WHEN FULL POWER AND STEERING WERE NEEDED. THE TUG COULD NOT BACK DOWN IN TIME AND THE BARGE RAN AGROUND JUST OUTSIDE THE CHNL AT MARKERS 27 AND 28. BARGE REFLOATED WITH NEXT TIDE AND BOTH VSLs PROCEEDED TO TAMPA FOR SURVEY.

DESCRIPTION/

FIRE BROKE OUT ON PORT ENGINE TURBOCHARGER INSULATION DUE TO HEAT IGNITING ACCUMULATED FUEL ON THE INSULATION FROM SMALL FUEL LEAK ON THE PORT ENGINE TURBOCHARGER.

DESCRIPTION/

CHIEF ENGINEER SECURED PORT ENGINE TO FIGHT FIRE. FIRE WAS QUICKLY EXTINGUISHED. BARGE GROUNDED WHEN TUG VIGILANT COULD NOT NEGOTIATE BEND IN THE CHANNEL.

--- EFFECTIVENESS OF EQUIPMENT ---

FIRE WAS EXTINGUISHED QUICKLY DUE TO FIRE EXTINGUISHER AND ENGINE BEING SECURED.

--- DESCRIPTION ---

WHEN ENGINE WAS SECURED THE FIRE WENT OUT WITH MINIMAL ASSISTANCE FROM FIRE EXTINGUISHER.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS34					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					<i>Vessel loses propulsion and/or steering; fire limited to one compartment</i>
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

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Event Number: MC94007126 (MSIS34)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	A small leak on the port engine turbocharger soaked the insulation around the unit. It eventually ignited	
Ignition Source	Hot surface (turbocharger)	
Detection	Crew	
Release Isolation	Crew secured the port engine	
Fire Suppression	The crew used a 15# portable CO ₂ extinguisher	
Impact on Propulsion	Partial loss of propulsion for the tug when the port engine was shut down. This caused loss of steering capability for the barge that the tug was towing	
Impact on Steering	Loss of steering for the barge	
Human Casualty	None	
Corrective Action to Prevent Recurrence	No preventative action mentioned	

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EVENT NUMBER: MC94011889

--- INCIDENT BRIEF ---

CG INSPECTED SMALL PAX VSL. EXPERIENCED E/R FIRE WHILE U/W WITH PAX. ONBOARD. CREW EXTINGUISHED FIRE AND VSL RETURNED TO PORT AND SAFELY DISCHARGED PAX. CAUSE OF FIRE WAS SEVERED FUEL JUMPER LINE ON PORT ENGINE. ALL WIRES & HOSES EXPOSED TO FIRE WERE REPLACED. NO PERSONNEL INJURIES, NO OTHER DAMAGE.

--- EFFECTIVENESS OF CREW ---

maintained order among passengers, after utilizing fixed extinguishing system, completed necessary repairs, and notified CG.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS35					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					<i>Fire limited to one compartment</i>
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

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Event Number: MC94011889 (MSIS35)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	Diesel fuel leaking from fuel jumper line to main diesel generator	
Ignition Source	Hot surface (main engine)	
Detection	Crew	
Release Isolation	Not stated	Not inferred
Fire Suppression	The crew used the Halon fixed system	
Impact on Propulsion		Temporary loss of propulsion
Impact on Steering		None
Human Casualty	None	
Corrective Action to Prevent Recurrence	No preventative action mentioned	

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EVENT NUMBER: MC94015300

--- INCIDENT BRIEF ---

WHILE CONDUCTING POLLUTION INVESTIGATION AT PASSPORT MARINA (UNRELATED TO THIS VSL), POLLUTION INVESTIGATOR (PI) OBSERVED THE UPV MARY M BEING TOWED INTO CAPTAIN ANDERSON'S PIER. PI PROCEEDED TO VSL AND WAS INFORMED VSL'S ENGINE ROOM HAD CAUGHT ON FIRE (STARBOARD FUEL LINE INSTALLED TOO CLOSE TO STARBOARD ENGINE TURBO CHARGER). VSL ABLE TO EFFECT REPAIRS AND RUN FOLLOWING DAY.
NOTE: MINOR BURN TO OPERATOR'S RIGHT HAND WHILE SHUTTING DOWN ENGINES.

--- DESCRIPTION ---

STARBOARD FUEL LINE INSTALLED TOO CLOSE TO STARBOARD TURBO CHARGER. FUEL LINE LEAKED FUEL AND FIRE WAS OBSERVED.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS36					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					<i>Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment</i>
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

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Event Number: MC94015300 (MSIS36)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	The starboard fuel line was installed too close to the engine turbocharger. Fuel line leaked fuel, causing the line to leak	
Ignition Source	Hot surface (turbocharger)	
Detection	Crew	
Release Isolation	The crew shut down the engines	
Fire Suppression		None (not needed)
Impact on Propulsion		Loss of propulsion. (The vessel had to be towed)
Impact on Steering		None
Human Casualty	Minor burn to operator's hand while shutting down engines	
Corrective Action to Prevent Recurrence	No preventative action mentioned	

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EVENT NUMBER: MC94015456

--- INCIDENT BRIEF ---

The Tug was pushing two loaded stone barges when it reported that it had an uncontrollable engine room fire 2 miles from the Tapanzee Bridge. Fireboats from local agencies, USCG and local fire departments arrived on scene, rescued the crew and extinguished the fire. Another tugboat arrived and took control of the stone barges. The distressed tug was towed to N.J. for repairs. It is back in service.

--- CASUALTY PROLOGUE ---

A fuel leak dripped onto a hot manifold which caused a fire in the aft area of the port main engine.

--- EFFECTIVENESS OF EQUIPMENT ---

The engine was engulfed in flames and, therefore, it was too hot below for any of the crew to enter the engine room and activate the extinguisher.

--- EFFECTIVENESS OF CREW ---

The crew was not able to effectively fight the fire in any manner.

--- COMMENTS ---

4. The Tug transited through the Hudson River without incident. The Mate was at the wheel, the captain was off duty and was sleeping in his rack. The chief engineer was on duty as were two of the deckhands. At approximately 1945 one of the deckhands was in the galley sitting down and he noticed smoke being emitted from under the engine room door. (One of the ways down to the engine room is through this door which opens from the galley.) He tried to open the door to investigate and immediately felt a rush of heat and smoke coming out of the door. He began to yell fire and went to get the chief engineer.

10. MIO NY investigators met the Tug at the Claremont Terminal. The crew and the Port Engineer for the company were interviewed, photographs of the damage were taken and the engine room was inspected for clues and evidence. An inspection of this space by the Port Engineer, Chief Engineer and MIO Investigator discovered that the fire originated at the port main engine. This was significant because that engine had been installed the week before the fire. The previous engine had thrown a piston rod and suffered engine block damage. The new rebuilt engine was installed at the Claremont yard by Great Lakes employees and the port engineer. The engine had undergone sea trials early in the morning on 6 JUN 94 and this was its first trip up river with the rebuilt engine. When the vessel left the pier at 1700 hours everything seemed to be operating perfectly.

11. It was determined that the fire was started by a fuel leak that dripped onto a hot manifold in the port main engine. This defect was discovered by the port engineer as they began to pull the engine apart. At first it was believed that there may have been a flaw in the new engine or maybe a problem with its installation, but both of these theories proved incorrect. It is not known how the fuel leak developed, but it is thought that it was caused by human error.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS37					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

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Event Number: MC94015456 (MSIS37)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	Fuel leak dripped onto a hot manifold. (The engine had just been installed on vessel)	
Ignition Source	Hot surface (exhaust manifold)	
Detection	Crew	
Release Isolation	None	
Fire Suppression	Onboard equipment not used due to intensity of the fire. Fire boats put out fire	
Impact on Propulsion	Loss of propulsion	
Impact on Steering		None
Human Casualty	Three minor injuries	
Corrective Action to Prevent Recurrence	No preventative action mentioned	

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EVENT NUMBER: MC94017486

--- INCIDENT BRIEF ---

THE M/V POTOMAC, AN UNINSPECTED TOWING VSL, HAD A MINOR FIRE WHICH OCCURRED IN THE E/R. THE APPARENT CAUSE OF THE FIRE WAS A FUEL LINE WHICH RUPTURED DUE TO EXCESSIVE VIBRATION AND SPRAYED FUEL ONTO THE MANIFOLD OF THE PORT ENGINE. THIS VAPORIZED FUEL THEN IGNITED. THE FIRE WAS EXTINGUISHED BY SECURING THE FUEL LINE AND REPAIRS WERE MADE. THERE WAS NO REPORT OF POLLUTION OR INJURIES. THERE IS NO EVIDENCE OF WRONGDOING ON THE PART OF THE CREW.

Release of pressurized flammable or combustible liquid	Prevent spray ignition	Prevent fire propagation to other hull compartments	Prevent loss of propulsion or steering	Prevent human casualty	Consequence
Event: MSIS38					No consequences of interest
					Human casualty(ies)
					Vessel loses propulsion and/or steering
					Human casualty(ies); vessel loses propulsion and/or steering
					Fire limited to one compartment
					Human casualty(ies); fire limited to one compartment
					Vessel loses propulsion and/or steering; fire limited to one compartment
					Human casualty(ies); vessel loses propulsion and/or steering; fire limited to one compartment
					Fire in multiple compartments
					Human casualty(ies); fire in multiple compartments
					Vessel loses propulsion and/or steering; fire in multiple compartments
					Human casualty(ies); vessel loses propulsion and/or steering; fire in multiple compartments

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Event Number: MC94017486 (MSIS38)	Event Characterization	
	As Documented in the Event Report	As Inferred from the Event Report
System/Location	Fuel oil/engine room	
Cause	Fuel line ruptured and sprayed fuel on the manifold of the port engine. The fuel line is believed to have broken due to excessive vibration	
Ignition Source	Hot surface (most likely the engine blower)	
Detection	Alarm	
Release Isolation	The crew secured the fuel line	
Fire Suppression	Portable extinguishers used	
Impact on Propulsion	Partial loss of propulsion when the port engine was secured	
Impact on Steering		None
Human Casualty	None	
Corrective Action to Prevent Recurrence	No preventative action mentioned	

[Blank]